

## PRECONSTRUCTION

Thomas Terry (919) 707-6281

### ROADWAY DESIGN

[tterry@ncdot.gov](mailto:tterry@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
201	Rural Roadway Design	Entry level for smaller and less complex projects, i.e. bridge replacement projects, safety projects and rural widening projects.	Roadway Engineer	P.E.	P.E.	P.E.	Must submit sample plans showing sufficient design capacity, including horizontal and vertical alignments with curve data, design information for intersections and interchanges, typical sections and cross sections. Statement of CADD capability – Microstation/Geopack Software is required, including names of CADD users/technicians.
269	Urban Roadway Design	More complex urban widening and new location projects with increased project impact restrictions due to dense residential and/or commercial development.	Roadway Engineer	P.E.	P.E.	P.E.	Must submit sample plans showing sufficient design capacity, including horizontal and vertical alignments with curve data, design information for intersections and interchanges, typical sections and cross sections. Statement of CADD capability – Microstation/Geopack Software is required, including names of CADD users/technicians.
126	Interchange Design	Required for any projects that have interchanges in the scope of work.	Roadway Engineer	P.E.	P.E.	P.E.	Must submit sample plans showing sufficient design capacity, including horizontal and vertical alignments with curve data, design information for intersections and interchanges, typical sections and cross sections. Statement of CADD capability – Microstation/Geopack Software is required, including names of CADD users/technicians.
314	Roadway Lighting		Roadway Engineer	P.E.	P.E.	P.E.	Must meet the "Necessary Expertise" stated in the <i>AASHTO Roadway Lighting Design Guide</i> , dated October 2005. Must submit samples of work, including samples of voltage drop calculations, samples of foot-candle and uniformity calculations using lighting design software.
467	Low Impact Division Managed Roadway Design	Entry level design for smaller and less complex projects, i.e. bridge replacement projects, safety projects and rural widening projects advertised at the Division level.	Roadway Engineer	P.E.	P.E.	P.E.	Must submit sample plans showing sufficient design capacity including horizontal and vertical alignments with curve data, design information for intersections and interchanges, typical sections and cross sections. Statement of CADD capability including software type and names with experience level of CADD users/technicians is required. Firms without Microstation/Geopack capability will be limited to Division let projects. Firms with Microstation/Geopack capability will be qualified for Division projects that are centrally let (Division projects with construction costs exceeding \$1,200,000.00).

## **PRECONSTRUCTION**

**Watson McNeill    (919) 707-6800**

### **LOCATION AND SURVEYS**

[imneill@ncdot.gov](mailto:imneill@ncdot.gov)

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
92	GPS	Global Positioning System Surveying	Land Surveyor	P.L.S.	L.S.	Must submit a list of GPS surveying equipment, an example of a static network adjustment (not VRS or Opus) showing a diagram of your network, raw coordinates, closures and adjusted coordinates and a GPS site calibration or site localization.)	
235	SUE	Subsurface Utility Engineering	Land Surveyor	P.L.S.	L.S.	Must submit a list of SUE surveying equipment including surface geophysical location equipment and non-damaging excavating equipment.	
199	Route Location Surveys	Conventional Surveying	Land Surveyor	P.L.S.	L.S.	Must submit a list of conventional surveying equipment and an example of a route survey – the example must have a tie to control monumentation and must have bearing distances and curve data on the alignment. Either a hard copy or electronic PDF of the plans is acceptable. Hard copy should be no more than 2 pages, preferable 11" x 17" or smaller, and the text must be legible.	
104	High Density Laser Scanner	High Density Laser Scanner	Land Surveyor	P.L.S.	L.S.	Must submit a list of High Density Laser Scanning equipment.	
112	Hydrographic Surveys	Hydrographic Surveys	Land Surveyor	P.L.S.	L.S.	Must submit a list of hydrographic surveying equipment which must include a boat equipped with a sonar integrated with a GPS receiver.	

**PRECONSTRUCTION****Matt Lauffer (919) 707-6703****HYDRAULIC DESIGN****mslauffer@ncdot.gov**

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
433	Tier I Basic Hydrologic and Hydraulic Design	<ul style="list-style-type: none"><li>a) Roadway drainage design, including ditches, small pipe culverts, storm sewer systems, outfall analysis, drainage investigations, etc.</li><li>b) Bridge and/or culvert design over streams using the Federal Highway Administration (FHWA) design guidelines, such as Hydraulic Design Series 5, 7, etc.</li><li>c) Drainage design using the North Carolina Department of Transportation "Stormwater Best Management Practices Toolbox".</li></ul>	Hydraulic/ Hydrologic Engineer	P.E.	1	P.E.	<p>Submit samples of the approved design reports and/or hydraulic calculations/models for a, b and c.</p> <p>Proof of work experience may be waived by the State Hydraulics Engineer for Engineers who have worked at NCDOT Hydraulics Unit as an Engineering Supervisor and/or Engineer with a minimum of five (5) years in review and/or design of hydrologic and hydraulic projects in the Unit.</p>
434	Tier II Complete Hydrologic and Hydraulic Design	<ul style="list-style-type: none"><li>a) Tier I, plus:</li><li>b) Design of bridges and culverts over FEMA regulated streams that require coordination and approvals from FEMA or their designees.</li></ul>	Hydraulic/ Hydrologic Engineer	P.E.	1	P.E.	<p>Meet all the requirements of Tier I.</p> <p>Firm is required to prepare drainage plans using the Microstation CADD and Geopak Drainage Software. Firm must have one hydraulic design engineer and one engineer or engineering technician with experience using Microstation CADD and Geopak Drainage Software.</p> <p>Submit samples of the approved design reports and hydraulic models that were used for the review and approval by FEMA or their designees.</p> <p>Proof of work experience may be waived by the State Hydraulics Engineer for Engineers who have worked at NCDOT Hydraulics Unit as an Engineering Supervisor and/or Engineer with a minimum of 15 years in review and/or design of hydrologic and hydraulic projects in the Unit.</p>

479	Tier III Complex Hydraulic Design	a) Tier II, plus: b) Two-dimensional (2D) hydraulic modeling design experience for bridges over streams that are under the influence of turbulent, unsteady flow, etc.	Hydraulic/ Hydrologic Engineer	P.E. 1	P.E. 1	Meet all the requirements of Tier II.  Must submit samples of the approved design reports and design models using 2-D hydraulic modeling.
480	Tier IV Unique Hydraulic Engineering (UHE) – National Flood Insurance Program	Extensive knowledge of the NFIP and experience in hydraulic model design, FEMA flood map revision, and review of hydraulic modeling for bridges and/or culverts over FEMA regulated streams under contract with FEMA or their designees.	Hydraulic/ Hydrologic Engineer	P.E. 1	P.E. 1	Submit samples of the approved review/design reports and hydraulic models under the contracts with FEMA and/or their designees.  Firm is required to have and use Microstation CADD Software.
481	Tier IV Unique Hydraulic Engineering (UHE) – National Pollutant Discharge Elimination System (NPDES)	Extensive knowledge of the US Environmental Protection Agency's NPDES program and experience in watershed pollutant load modeling (Total Maximum Daily Load or TMDL)	Hydraulic/ Hydrologic Engineer	P.E. 1	P.E. 1	Submit samples of NPDES compliance reports and TMDL models that were approved by the State and/or Federal Agencies.  Proof of work experience may be waived by the State Hydraulics Engineer for Engineers who have worked at NCDOT Hydraulics Unit as an Engineering Supervisor and/or Engineer - Advanced with a minimum of 10 years in managing and reviewing NPDES compliance tasks in the Unit.
482	Tier IV Unique Hydraulic Engineering (UHE) – Coastal Hydraulic Engineering	Extensive knowledge and experience of coastal hydrodynamics and simulation models using RMA2 (Resource Management Associates), ADCIRC (Advanced Circulation Model for Coastal Ocean Hydrodynamics) and SWAN (Simulation Waves Near Shore) software.	Hydraulic/ Hydrologic Engineer	P.E. 1	P.E. 1	Submit samples of the approved design reports and hydraulic models in the coastal areas.

## PRECONSTRUCTION

### STRUCTURES MANAGEMENT

Darlene Yarborough (919) 707-6406

[dyarborough@ncdot.gov](mailto:dyarborough@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
23	Bridges – Spans Over 200'	Two (2) Bridge Design Engineers	One (1) P.E.	P.E.	An example of highway bridge plans may be required, depending on past experience shown in Key Personnel's resume(s).		
24	Bridges – Spans Under 200'	Two (2) Bridge Design Engineers	One (1) P.E.	P.E.	An example of highway bridge plans may be required, depending on past experience shown in Key Personnel's resume(s).		
329	Electrical & Mechanical Design for Moveable Bridge Systems	Provide inspection, rehabilitation, troubleshooting and design for electrical and mechanical systems on moveable span bridges.	One (1) Electrical and One (1) Mechanical Engineer	P.E.	10	P.E.	Must submit examples of work over the past 10 years that indicate experience with electrical and mechanical systems on moveable span bridges.
319	Load Testing & Finite Analysis	Field Load Testing and Finite Element Modeling of Structures	Two (2) Engineers	One (1) P.E.	5	P.E.	Must demonstrate that it has Field Tested a minimum of five (5) structures. Must submit samples of work including calculations, finite element models and load test results. Firm is responsible for turnkey job including trucks and traffic control for the field load test.
444	Load Rating	Load Rating of NBIS Structures	Two (2) Engineers	One (1) P.E.	3	P.E.	Must submit samples of work. Firm may be required to demonstrate ability to perform finite element analysis, rate gusset plates, rate curved girder bridges, rate segmental bridges, rate cable stayed bridges and rate reinforced concrete box culverts. Must submit results in a format that is compatible with NCDOT Standards.
143	NBIS Bridge Inspection	NBIS Safety Inspection of Bridges	Team Leader(s)	P.E.		P.E.	Non-PE Inspection Team Leaders must have at least five (5) years of bridge safety inspection experience and must have successfully completed the NHI two week Safety Inspection of In-Service Bridges Course 130055. PE Team Leaders must have successfully completed the NHI two week Safety Inspection of In-Service Bridges Course 130055. Firm must demonstrate its ability to perform inspections using the NCDOT WIGINS program.

## **PRECONSTRUCTION**

### **VISUALIZATION**

**David Hinnant(919) 707-7050**

[dbhinnant@ncdot.gov](mailto:dbhinnant@ncdot.gov)

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
276	Visualization	Renderings - 2D images created from 3D models of the proposed project using CADD data in programs such as Microstation and Autodesk 3ds Max.					Three (3) examples from different Highway/Transportation projects.
		Photosimulations – Renderings that are superimposed and blended into an existing site photo, including post processing work in programs such as Adobe Photoshop.					Three (3) examples from different Highway/Transportation projects.
		Animations - A video product produced by rendering 24-30 images/frames per second, most often used to show a flyover or drive thru of a project, including post processing through programs such as Adobe Premiere or After Effects.					Three (3) examples from different Highway/Transportation projects.

**PRECONSTRUCTION****Chris Chen (919) 707-6876****GEOTECHNICAL ENGINEERING SERVICES**[cchen@ncdot.gov](mailto:cchen@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
294	Roadway Foundation Investigation & Design	Geotechnical Engineer Project Geologist or Geological Engineer	P.E. L.G. or P.E.	5 5	P.E.	At least one (1) key person that is a permanent employee of the firm is required for each role. For each key person, submit two (2) examples of DOT or similar work sealed by the key person and completed within the last three (3) years. Drilling contractor/ subcontractor must be prequalified for work code 3050: Drilling for Geotechnical Investigations, and equipment must be able to access wooded and overgrown areas, obtain N and H size cores and drill 120ft SPT borings and 200ft mud borings.	
295	Structure Foundation Investigation & Design	Geotechnical Engineer Project Geologist or Geological Engineer	P.E. L.G. or P.E.	5 5	P.E.	At least one (1) key person that is a permanent employee of the firm is required for each role. For each key person, submit one (1) shallow or driven pile foundation example and one (1) deep foundation example other than driven piles that are in accordance with the <i>AASHTO LRFD Bridge Design Specifications</i> , were sealed by the key person and completed within the last three (3) years. Drilling contractor/subcontractor must be prequalified for work code 3050: Drilling for Geotechnical Investigations, and equipment must be able to access wooded and overgrown areas, obtain N and H size cores and drill 120ft SPT borings and 200ft mud borings.	
296	Retaining Wall Investigation & Design	Post-Bid Design Retaining Walls Geotechnical Engineer Project Geologist or Geological Engineer	P.E. L.G. or P.E.	5 5	P.E.	At least one (1) key person that is a permanent employee of the firm is required for each role. For each key person, submit one (1) cut wall example and one (1) fill wall example of DOT or similar work that have at least 1500sf of wall face area and were sealed by the key person and completed within the last three (3) years. Drilling contractor/subcontractor must be prequalified for work code 3050: Drilling for Geotechnical Investigations, and equipment must be able to access wooded and overgrown areas, obtain N and H size cores and drill 120ft SPT borings and 200ft mud borings.	
297	Pavement Design Investigation	Subgrade Design and Chemical Stabilization Geotechnical Engineer Project Geologist	P.E. L.G. or P.E.	5 5	P.E.	At least one (1) key person that is a permanent employee of the firm is required for each role. For each key person, submit an example of DOT or similar work for each description of work sealed by the key person and completed within the last three (3) years. Experience with using dynamic cone penetrometers, collecting load cell	

			<p>or Geological Engineer</p> <p>data, and recovering pavement cores using thin walled core barrels is required.</p> <p>Drilling contractor/subcontractor must be prequalified for work code 3050: Drilling for Geotechnical Investigations, and equipment must be able to complete 20 pavement cores per rig per day, obtain 4" to 6" dia. pavement cores up to 24" thick and drill pavement borings to a depth of 20 ft.</p>
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## **PRECONSTRUCTION**

### **GEOENVIRONMENTAL SERVICES**

**Cyrus Parker (919) 707-6868**

[cfparker@ncdot.gov](mailto:cfparker@ncdot.gov)

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
330	Hazardous Waste Site Analysis & Remediation	Geoenvironmental Geologist/Engineer	L.G. or P.E.	5	L.G. or P.E.	At least one (1) key person that is a permanent employee of the firm is required for the geologist or engineer. For each key person, submit two (2) examples of DOT or similar work sealed by the key person and completed within the last three (3) years. Experience with hazardous waste sites, landfills, underground storage tanks, brownfields or dry cleaning solvent remediation in North Carolina is required.	

## **PRECONSTRUCTION**

### **GEOFYSICAL SERVICES**

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305	Geophysical Services	Ground Penetrating Radar (GPR), Seismic Refraction/Reflection, Resistivity, Electromagnetic (EM), etc.	Geophysicist		5		At least one (1) key person that is a permanent employee of the firm is required for the geophysicist. For each key person, submit an example of DOT or similar work for two (2) different descriptions of work completed by the key person within the last three (3) years.

## PRECONSTRUCTION

### GEOTECHNICAL SPECIALTY SERVICES

Chris Chen (919) 707-6876

[cchen@ncdot.gov](mailto:cchen@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
298	Ground Improvement Design	Dynamic Compaction, Grouting, Stone Columns, Wick Drains, etc.	Geotechnical Engineer	P.E.	10	P.E.	At least one (1) key person that is a permanent employee of the firm is required for the geotechnical engineer. For each key person, submit an example of DOT or similar work for two (2) different descriptions of work sealed by the key person and completed within the last three (3) years.
299	Cantilever Retaining Wall Design	Sheet Pile, Cantilever Concrete, Pile Panel and Soldier Pile Retaining Walls.	Geotechnical Engineer	P.E.	5	P.E.	At least one (1) key person that is a permanent employee of the firm is required for the geotechnical engineer. For each key person, submit an example for two (2) different descriptions of work that are in accordance with the <i>AASHTO LRFD Bridge Design Specifications</i> , were sealed by the key person and completed within the last three (3) years.
300	Anchored Retaining Wall Design	Anchored (Tieback) Retaining Walls and Shoring, Soil Nail Retaining Walls and Temporary Soil Nail Walls.	Geotechnical Engineer	P.E.	5	P.E.	At least one (1) key person that is a permanent employee of the firm is required for the geotechnical engineer. For each key person, submit one (1) anchored shoring or retaining wall example that is in accordance with the <i>AASHTO LRFD Bridge Design Specifications</i> and one (1) soil nail retaining wall or temporary soil nail wall example that is in accordance with the <i>FHWA Geotechnical Engineering Circular No. 7 "Soil Nail Walls"</i> (Publication No. FHWA-IF-03-017). Submit examples sealed by the key person and completed within the last three (3) years.
364	MSE Retaining Walls Design		Geotechnical Engineer	P.E.	5	P.E.	At least one (1) key person that is a permanent employee of the firm is required for the geotechnical engineer. For each key person, submit two (2) examples of DOT or similar work that were designed using MSEW software, version 3.0 or later, manufactured by ADAMA Engineering, Inc. and are in accordance with the <i>AASHTO LRFD Bridge Design Specifications</i> . Submit examples must be from two (2) different projects that were sealed by the key person and completed within the last three (3) years.
301	Dam Investigation, Evaluation & Design		Geotechnical Engineer	P.E.	10	P.E.	At least one (1) key person that is a permanent employee of the firm is required for each role. For each key person, submit two (2) examples of DOT or similar work

		Project Geologist or Geological Engineer	L.G. or P.E.	5	sealed by the key person and completed within the last three (3) years. Drilling contractor/ subcontractor must be prequalified for work code 3050: Drilling for Geotechnical Investigations, and equipment must be able to access wooded and overgrown areas, obtain N and H size cores and drill 120ft SPT borings and 200ft mud borings.
302	Landslide Investigation, Evaluation & Mitigation Design	Geotechnical Engineer	P.E.	10	At least one (1) key person that is a permanent employee of the firm is required for each role. For each key person, submit two (2) examples of DOT or similar work sealed by the key person and completed within the last three (3) years. Drilling contractor/ subcontractor must be prequalified for work code 3050: Drilling for Geotechnical Investigations, and equipment must be able to access wooded and overgrown areas, obtain N and H size cores and drill 120ft SPT borings and 200ft mud borings.
303	Rock Slope Investigation, Evaluation & Design	Geotechnical Engineer	P.E.	10	At least one (1) key person that is a permanent employee of the firm is required for each role. For each key person, submit one (1) rock slope design example and one (1) rock slope stabilization example of DOT or similar work for rock slopes taller than 50ft and steeper than 1:1 (H:V). Submit examples sealed by the key person and completed within the last three (3) years. Successful completion of at least 1,000ft of rock coring within the last three (3) years and experience with a down hole camera is required. Drilling contractor/subcontractor must be prequalified for work code 3050: Drilling for Geotechnical Investigations, and equipment must be able to access wooded and overgrown areas, obtain N and H size cores and drill 120ft SPT borings and 200ft mud borings.
304	Rock Blasting Evaluation & Design	Geotechnical Engineer	P.E.	10	At least one (1) key person that is a permanent employee of the firm is required for the geotechnical engineer. For each key person, submit one (1) pre-splitting example and one (1) other rock blasting example of DOT or similar work sealed by the key person and completed within the last three (3) years.

**CONSTRUCTION SERVICES****Mickey Biedell      (919) 707-4803****CONSTRUCTION SERVICES**[mbiedell@ncdot.gov](mailto:mbiedell@ncdot.gov)

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
195	Roadway Construction Engineering & Inspection		Construction Manager	P.E.			Construction Manager must show sufficient experience overseeing these type projects with the last five (5) years.
233	Structures Construction Engineering & Inspection		Construction Manager	P.E.			Construction Manager must show sufficient experience overseeing these type projects with the last five (5) years.
125	Intelligent Transportation System (ITS) Inspection		Construction Manager	P.E.			Construction Manager must show sufficient experience overseeing these type projects with the last five (5) years.
289	Signal Systems Inspection		Construction Manager	P.E.			Construction Manager must show sufficient experience overseeing these type projects with the last five (5) years.
42	Construction Contract Claims Analysis		Construction Manager				Construction Manager must show sufficient experience overseeing these type projects with the last five (5) years.
47	Critical Path Method (CPM) Scheduling		Construction Manager				Construction Manager must show sufficient experience overseeing these type projects with the last five (5) years.

**TRANSPORTATION MOBILITY & SAFETY DIVISION****Renee Roach (919) 771-2741****ITS & SIGNALS**[rroach@ncdot.gov](mailto:rroach@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
207	Signal Design	Local intersection signal design.	Signal Design Engineer	P.E.	2	P.E.	Key personnel should be employees with at least two (2) years of hands-on experience with a significant number of signal plans. Personnel that have only managed projects involving traffic signals will not qualify without sufficient signal design experience. Examples of Key Personnel's work will only be requested if their resume does not show evidence of sufficient signal design experience; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. If key personnel have been previously prequalified in this discipline, no examples are required.
209	Signal System Communications Design	Developing communication plans (fiber, radio, Ethernet, etc.) and performing surveys of aerial utilities and making recommendations for adjustments based on the NESC.	Signal System Communications Design Engineer	P.E.	2	P.E.	SIGNAL SYSTEMS COMMUNICATIONS DESIGN (communication networks for closed loop signal systems): Key personnel should be employees with at least two (2) years of plan designing experience using fiber optic communications, radio communications and other types of communication schemes (Ethernet, wireless modems, etc.) Personnel that have only managed projects involving traffic signals will not qualify without sufficient signal design experience. Examples of Key Personnel's work will only be requested if their resume does not show evidence of sufficient communications design experience; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. If key personnel have been previously prequalified in this discipline, no examples are required unless requested by the reviewing Unit.
			Signal System Communications Design Engineer		2		UTILITY MAKE-READY PLANS: Key personnel should be employees with at least two (2) years of experience reviewing utility attachments on joint-use pole lines and be able to identify violations with regards to the rules and regulations associated with the National Electrical Safety Code. Additionally, these individuals will make recommendations for adjustments when violations are identified and ensure no violations will occur once our new communications media is installed on the joint-use pole. Personnel that have only managed projects involving traffic signals will not qualify without sufficient signal design experience. Examples of Key

			Personnel's work will only be requested if their resume does not show evidence of sufficient Utility Make Ready Design experience; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. If key personnel have been previously prequalified in this discipline, no examples are required unless requested by the reviewing Unit.
210	Signal System Timing	Signal System Timing Engineer P.E.	For stand-alone signal systems separate from centralized metropolitan signal system timing plan development/implementation. Key personnel should be employees with at least two (2) years of signal system coordination timing plan development and field implementation experience. Emphasis on the ability/experience to develop signal system timing plans, with additional emphasis on having the experience and expertise to field implement and fine tune the signal system timing plans. Personnel that have only managed projects involving signal system timing or only have experience using SYNCHRO, SimTraffic, HCM, and other traffic and/or transportation related software to develop, analyze, optimize, model, and/or evaluate signal system timing plans will not qualify without sufficient signal system timing field implementation/fine tuning experience. Examples of Key Personnel's work will only be requested if their resume does not show evidence of sufficient signal system timing plan development and field implementation experience; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. If key personnel have been previously prequalified in this discipline, no examples are required.
208	Signal Equipment Design	Project Engineer P.E. 2	Must have at least one (1) key person per role. Key personnel should be employees with at least two (2) years of hands-on signal equipment design experience, preferably using 2070 controllers. Must submit examples of DOT or similar work completed within the last five (5) years and sealed by each engineer; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. If previously prequalified in this discipline, no examples are required unless requested by the reviewing Unit. Examples should include: copies of sealed electrical design plans showing configuration for the controller, cabinet and other equipment.
123	Intelligent Transportation System Design	ITS Design Engineer P.E. 2	Key personnel should be employees with at least two (2) years of hands-on ITS design experience with a significant number of ITS plans. Personnel that have only managed projects involving ITS will not qualify without sufficient ITS design experience. Examples of key personnel will only be request if their resume does not show evidence of sufficient signal design experience; electronic submittals only.

			If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. If key personnel have been previously prequalified in this discipline, no examples are required unless requested by the reviewing Unit.
			ready engineering), computerized signal systems, closed circuit television cameras, dynamic message signs, incident detection, roadway weather information systems, automated weigh stations, low visibility detection, reversible lanes, and software interface requirements.

**TRANSPORTATION MOBILITY & SAFETY DIVISION****Renee Roach (919) 771-2741****SIGNING & DELINEATIONS**[rroach@ncdot.gov](mailto:rroach@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
97	Guide Sign Design – Conventional Roads	Conventional road signing plan design.	Project Engineer	P.E.	P.E.	Must have at least one (1) key person per role. Experience using "Guide Sign" design software for permanent or work zone use. Must submit examples of DOT or similar work completed within the last five (5) years and sealed by each engineer; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. If previously prequalified in this discipline, no examples are required unless requested by the reviewing Unit. Examples should include: project lists and descriptions including names and current contact information of clients and owners, resumes, references, certificates, experience descriptions and details, etc. If a firm has previously completed work for the NCDOT, this will also be considered for prequalification.	
98	Guide Sign Design – Expressways and Freeways	Expressway and Freeway sign plan design.	Project Engineer	P.E.	P.E.	Must have at least one (1) key person per role. Experience using "Guide Sign" design software for permanent or work zone use. Experience in support design (ground and overhead mounted) and know criteria for barrier guardrail or other protective devices. Must submit examples of DOT or similar work completed within the last five (5) years and sealed by each engineer; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. If previously prequalified in this discipline, no examples are required unless requested by the reviewing Unit. Examples should include: project lists and descriptions including names and current contact information of clients and owners, resumes, references, certificates, experience descriptions and details, etc. If a firm has previously completed work for the NCDOT, this will also be considered for prequalification.	
155	Pavement Markings Plans	Pavement markings, bicycle and pedestrian plans.	Project Engineer	P.E.	P.E.	Must have at least one (1) key person per role. Provide delineation plans that include pedestrians accounted for with curb ramp and crosswalks. Must submit examples of DOT or similar work completed within the last five (5) years and sealed by each engineer; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. If previously prequalified in this discipline, no examples are	

		required unless requested by the reviewing Unit. Examples should include: project lists and descriptions including names and current contact information of clients and owners, resumes, references, certificates, experience descriptions and details, etc. If a firm has previously completed work for the NCDOT, this will also be considered for prequalification.
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**TRANSPORTATION MOBILITY & SAFETY DIVISION****Renee Roach (919) 771-2741****CONGESTION MANAGEMENT**[rroach@ncdot.gov](mailto:rroach@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
252	Traffic Impact Studies	Preparation of Traffic Impact Analysis/Study (TIA/TIS) for NCDOT review, primarily for a private developer and municipal projects seeking access to the State Highway System.	Project Engineer	P.E.			<p>Must have at least one (1) key person per role. Must show adherence to all Department policies and guidelines, including the <i>Policy on Street and Driveways, Driveways Access to North Carolina Highways and the NCDOT Congestion Management Capacity Analysis Guidelines</i>.</p> <p>Prequalification in this discipline is not required for a firm/engineer to submit a TIA for NCDOT review, as the Department cannot dictate which engineer can be hired by a private entity. Prequalification in this discipline indicates that the engineer in question has demonstrated adherence to all relevant policies and practices, and as such simplified the Department's review and evaluation of the requested access. The primary purpose of this discipline is to indicate the likely review time of the submitted report by the Congestion Management Section. Must submit examples of DOT or similar work completed within the last five (5) years and sealed by each engineer; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. If previously prequalified in this discipline, no examples are required unless requested by the reviewing Unit. Examples should include: project lists and descriptions including names and current contact information of clients and owners, resumes, references, certificates, experience descriptions and details, etc. If a firm has previously completed work for the NCDOT, this will also be considered for prequalification.</p>
27	Capacity Analysis – Freeways and Interchanges	Traffic analysis of uninterrupted flow operation. This may include freeway merge, diverge and weaving segments, mainline operation and design and review of interchange concepts.	Project Engineer	P.E.			<p>Must have at least one (1) key person per role. Analysis methodology should follow <i>Highway Capacity Manual (2010)</i> procedures, primarily found in Volume 2, Uninterrupted flow. This analysis is macroscopic. Must submit examples of DOT or similar work completed within the last five (5) years and sealed by each engineer; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. If previously prequalified in this discipline, no examples are required unless requested by the reviewing Unit. Examples should include: project lists and</p>

				descriptions including names and current contact information of clients and owners, resumes, references, certificates, experience descriptions and details, etc. If a firm has previously completed work for the NCDOT, this will also be considered for prequalification.
26	Capacity Analysis – Intersections and Corridors	Traffic analysis of interrupted flow operation. This may include signalized and unsignalized intersection analysis and corridor operation.	Project Engineer P.E.	Must have at least one (1) key person per role. Analysis methodology should follow <i>Highway Capacity Manual</i> (2010) procedures, primarily found in Volume 3, Interrupted flow. This analysis is macroscopic, although simpler microscopic procedures may be used. Must submit examples of DOT or similar work completed within the last five (5) years and sealed by each engineer; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. If previously prequalified in this discipline, no examples are required unless requested by the reviewing Unit. Examples should include: project lists and descriptions including names and current contact information of clients and owners, resumes, references, certificates, experience descriptions and details, etc. If a firm has previously completed work for the NCDOT, this will also be considered for prequalification.
30	Capacity Analysis – Roundabouts	Traffic analysis of roundabout intersections. This includes capacity analysis of roundabout operations using specialized software (as listed in the Congestion Management Traffic Analysis Guidelines).	Project Engineer P.E.	Must have at least one (1) key person per role. Analysis methodology should follow <i>Highway Capacity Manual</i> (2010) procedures, primarily found in Volume 3, Interrupted flow. This analysis is separate from the general intersection category because of the specialized nature of roundabout design and operation. Must submit examples of DOT or similar work completed within the last five (5) years and sealed by each engineer; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. If previously prequalified in this discipline, no examples are required unless requested by the reviewing Unit. Examples should include: project lists and descriptions including names and current contact information of clients and owners, resumes, references, certificates, experience descriptions and details, etc. If a firm has previously completed work for the NCDOT, this will also be considered for prequalification.
256	Traffic Simulations Using Advanced Modeling Software	Traffic simulations of complex networks. This includes proficiency with advanced simulation modeling software to analyze more complicated road networks. This work may be required for the completion of documents involving freeway interchanges and alternative intersection design that cannot be reasonable completed by macroscopic	Project Engineer P.E.	Must have at least one (1) key person per role. Software packages used for this discipline include, but not limited to, TSIS-CORSIM, VISSIM, Paramics and TransModeler. Because of its limitations for use for uninterrupted flow, the Synchro/SimTraffic software package is not included for qualification in this discipline. Must submit examples of DOT or similar work completed within the last five (5) years and sealed by each engineer; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. If previously prequalified in this discipline, no examples are required unless requested by the reviewing Unit.

		analysis software.		Examples should include: project lists and descriptions including names and current contact information of clients and owners, resumes, references, certificates, experience descriptions and details, etc. If a firm has previously completed work for the NCDOT, this will also be considered for prequalification.
127	Interchange Modification/Justification Reports	Interchange Modification or Justification Reports (IMR/IJR). This includes all steps in preparation of IMR/IJR for submittal to FHWA. Steps include advanced traffic simulations, freeway and interchange analysis and providing detailed information for FHWA IMR/IJR process steps.	Project Engineer P.E.	Must have at least one (1) key person per role. Prequalification for both Category Analysis – Freeways and Interchanges and Traffic Simulations Using Advanced Modeling Software is required to become approved in this discipline. Must submit examples of DOT or similar work completed within the last five (5) years and sealed by each engineer; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. If previously prequalified in this discipline, no examples are required unless requested by the reviewing Unit. Examples should include: project lists and descriptions including names and current contact information of clients and owners, resumes, references, certificates, experience descriptions and details, etc. If a firm has previously completed work for the NCDOT, this will also be considered for prequalification.
205	School Traffic Operations Studies	Traffic Analysis of on-campus and directly affected intersections regarding school transportation operations (pedestrian, bicycle, parent and staff automobile, and buses). This work may be required for completion of documents involving school student loading operations (parent vehicle and buses), parent traffic needs (queuing and parking) and pedestrian/bicycle interaction.	Project Engineer P.E.	Must have at least one (1) key person per role. Must show knowledge and proficiency with advanced simulation modeling software to analyze school transportation. Modeling should include identifying the student loading zone and simulation of the on-campus traffic pattern (both entering and exiting the campus) and creating multiple student loading cycles. Analysis should include actual data and/or calculations provided by the MSTA School Traffic Calculator. Some preliminary design detail work/knowledge may be included. In addition to school transportation operations analysis will encompass work included in Capacity Analysis – Intersections and Corridors and Traffic Impact Studies. If previously prequalified in this discipline, recent examples are required. Must submit examples of DOT or similar work completed within the last five (5) years and sealed by each engineer; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. Examples should include: project lists and descriptions including names and current contact information of clients and owners, resumes, references, certificates, experience descriptions and details, etc. If a firm has previously completed work for the NCDOT, this will also be considered for prequalification.

**TRANSPORTATION MOBILITY & SAFETY DIVISION****Renee Roach (919) 771-2741****TRAFFIC MANAGEMENT – WORK ZONE TRAFFIC CONTROL**[rroach@ncdot.gov](mailto:rroach@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
247	Traffic Management Plans	Temporary Traffic Control Plan, Transportation Operations Plan and Public Information Plan	Project Engineer	P.E.			Must have at least one (1) key person per role. Must submit two (2) sealed and dated samples of Traffic Management Plans prepared within the last five (5) years by a current employee of the firm. Must submit examples of DOT or similar work completed within the last five (5) years and sealed by each engineer; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary. If previously prequalified in this discipline, no examples are required unless requested by the reviewing Unit. Examples should include: project lists and descriptions including names and current contact information of clients and owners, resumes, references, certificates, experience descriptions and details, etc. If a firm has previously completed work for the NCDOT, this will also be considered for prequalification.

**TRANSPORTATION MOBILITY & SAFETY DIVISION****Renee Roach (919) 771-2741****TRAFFIC SAFETY**[rroach@ncdot.gov](mailto:rroach@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
309	Traffic Data Collection	Traffic Data - The collection of turning movement (the number of vehicles making left, right, and through movements), volume/speed/class (the number, direction, speed, and classification of vehicles), spot speed (the speed of isolated vehicles or the lead vehicle of randomly selected platoons), delay (the time, in seconds, that vehicles have to wait), gap (time and/or distance between vehicles), saturation flow rate (the number of vehicles, with respect to time, allowed to travel through a signalized location during one signal cycle), travel time (the amount of time required for a vehicle to travel from one location to another), classification (the types/classes of vehicles), pedestrian corridor crossing (pedestrian movements along a specific corridor), and/or compliance (the tabulation of unit actions grouped by compliance/non-compliance with statutes, ordinances, and traffic control devices) data. This data is typically used for traffic signal warrant analyses, traffic safety analyses, and traffic mobility analyses.					TIA or Data Collection Experience.

458	Crash Analysis	<p>Perform Location Specific Crash Analysis using TEAAS. Crash analysis for section, intersection, interchange, bridge, ramps, and other locations.</p> <p>Project Engineer Must have at least one Project Engineer per role.</p>	<p>P.E. Must have at least one (1) key person per role. Person must have experience using the NCDOT Traffic Engineering Accident Analysis System (TEAAS) application / software. Must be able to demonstrate knowledge of crash location referencing and mile posting procedures used by the NCDOT Traffic Safety Unit. The individual should be able to provide documentation of attending a TEAAS Training course, if requested. The individual seeking prequalification must submit at least 10 examples of work, including all documentation, completed within the last five (5) years; electronic submittals only. If the work was performed for, or submitted to, the Transportation Mobility and Safety Division – Traffic Safety Unit, only a reference to the work is necessary. Examples should include the following documentation: location map, ADT map and ADT calculations, TEAAS Milepost features report, TEAAS Fiche report, Fiche Documentation File showing record of analysis decisions in proper format, TEAAS Crash Analysis Study, other items as necessary.</p> <p>Alternatively, or in addition to other stated requirements, the Traffic Safety Systems Section may provide a number of locations to the individual for analysis for the purpose of demonstrating qualification. The individual would perform the analysis and submit the analysis and documentation to the Traffic Safety Systems Section within a specified timeframe. The Traffic Safety Systems Section will review the work and respond. If an individual is determined by the Traffic Safety Systems Section to not demonstrate qualifications, they will not be reassessed again for a minimum six month time period.</p> <p>If previously prequalified in this discipline, no examples are required unless requested by the reviewing Unit.</p>	<p>P.E. Must have at least one (1) key person per role. Person must be capable of providing full range of traffic engineering, traffic operations (including traffic control devices), traffic safety and regulatory investigations, research and recommendations when it comes to reviewing roadway, traffic control, traffic signal, signing, pavement marking plans, etc. Must have experience and a demonstrated knowledge in design reviews and must be capable of identifying project deficiencies and justified traffic safety measures that will improve safety and operational performance. Applied traffic operational, safety and road geometric knowledge and regional familiarity / knowledge are required. Familiarity with MUTCD, AASHTO, TEEPL and North Carolina Transportation laws and regulations are required.</p> <p>The individual seeking prequalification must submit examples of work, including all documentation completed within the last five (5) years; electronic submittals only</p>

		(preferably North Carolina based work). Examples include: traffic engineering, and traffic safety investigation & analysis experience and must be able to use evidence driven data to justify traffic engineering and traffic safety recommendations. Project / plan review letters and correspondence dealing with safety measures for TIP type reviews on projects. If the work was performed for, or submitted to, the Transportation Mobility and Safety Division – Traffic Safety Unit, only a reference to the work is necessary. If previously prequalified in this discipline, no examples are required unless requested by the reviewing Unit.
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**TRANSPORTATION MOBILITY & SAFETY DIVISION****Renee Roach (919) 771-2741****TRAFFIC SYSTEMS OPERATIONS**[rroach@ncdot.gov](mailto:rroach@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
462	Traffic Operations	Scoping, developing, and operating traffic operations programs and services.	Traffic Operations Experts				<p>Key employees must:</p> <ul style="list-style-type: none"><li>— Display national experience/Exposure/Knowledge of TO Performance Measures</li><li>— Display experience with Writing Proposals for, Designing, Implementing, Testing, and Managing Automated Transportation Management Systems (ATMS)</li><li>— Have 2 years of experience Operating Transportation Management Centers (TMC)</li><li>— Display experience with development and implementation of TMC Operator Training Programs</li><li>— Display experience with development and implementation of TMC Operator Certification Programs</li><li>— Show experience with TMC Performance Reporting including examples</li><li>— Show experience with scoping and developing TMC Implementation Plans</li><li>— Have 2 years of experience:<ul style="list-style-type: none"><li>• providing TMC Media Coordination</li><li>• providing TMC Law Enforcement Coordination</li><li>• with Customer Service Operations</li><li>• with Emergency Operations Show experience of developing and implementing Response Plans</li></ul></li><li>— Show experience with and/or knowledge of:<ul style="list-style-type: none"><li>• Advance Traffic Management (ATM)</li><li>• Travel Demand Management (TDM)</li><li>• Ramp Meter Operations</li><li>• Variable Speed Limit Operations</li><li>• Traffic Analysis related to TO</li></ul></li></ul> <p>Examples of Key Personnel's work will only be requested if their resume does not show evidence of sufficient traffic operations experience; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary.</p>
463	Incident Management	Scoping, developing, and operating incident management related programs and services.	Incident Management Experts				<p>— Display national experience/Exposure/Knowledge of TIM Performance Measures</p> <p>— 2 year of experience with:<ul style="list-style-type: none"><li>• Incident Command Systems (ICS)</li><li>• providing Service Patrol Operations</li></ul></p>

		<ul style="list-style-type: none"> <li>• Display national experience/exposure/knowledge of Incident Scene Traffic Control</li> </ul> <p>— Show experience with and/or knowledge of:</p> <ul style="list-style-type: none"> <li>• Service Patrol Training Programs</li> <li>• TIM Certification Programs</li> <li>• Developing and implementing TIM Standard Operating Procedures/Guidelines</li> <li>• Facilitating TIM Team Meetings</li> <li>• Scoping, developing and implementing Heavy Towing Programs</li> </ul> <p>Examples of Key Personnel's work will only be requested if their resume does not show evidence of sufficient traffic operations experience; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary.</p>
464	ITS Operations	<p>Scoping, developing, and operating ITS Operations related programs and services.</p> <p>ITS Operations Experts</p> <ul style="list-style-type: none"> <li>— Show experience with scoping and developing Intelligent Transportation Systems (ITS) Device Maintenance Programs</li> <li>— 2 years of experience with: <ul style="list-style-type: none"> <li>• TMC Configuration Management</li> <li>• Systems Engineering</li> <li>• Systems Management</li> </ul> </li> </ul> <p>Examples of Key Personnel's work will only be requested if their resume does not show evidence of sufficient traffic operations experience; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary.</p>
465	Traveler Information	<p>Scoping, developing, and operating traveler information related programs and services.</p> <p>— 5 years of experience: <ul style="list-style-type: none"> <li>• scoping, developing and implementing 511 Systems</li> <li>• operating a 511 System</li> </ul> </p> <p>— Show experience with providing quality Voice Recognition Programs</p> <p>Examples of Key Personnel's work will only be requested if their resume does not show evidence of sufficient traffic operations experience; electronic submittals only. If the work was performed for or submitted to the Transportation Mobility and Safety Division, only a reference to the work is necessary.</p>

**PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS****Tracy Walter (919) 707-6177****PROJECT PLANNING FOR HIGHWAY PROJECTS**[twalter@ncdot.gov](mailto:twalter@ncdot.gov)

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
32	Categorical Exclusions	NEPA and NCEPA analysis and regulatory compliance.	NEPA/NCEPA Practitioner	PE or AICP preferred	3	P.E.	NEPA/NCEPA experience must have required consideration of environmental regulations such as Section 404, Section 4(f), Section 6(f), Section 106 and community issues such as EJ and underserved populations.
63	Environmental Assessment/Finding of No Significant Impacts	NEPA and NCEPA analysis and regulatory compliance.	NEPA/NCEPA Practitioner	PE or AICP preferred	5	P.E.	NEPA/NCEPA experience must have required consideration of environmental regulations such as Section 404, Section 4(f), Section 6(f), Section 106 and community issues such as EJ and underserved populations.
66	Environmental Impact Statement/Record of Decision	NEPA and NCEPA analysis and regulatory compliance.	NEPA/NCEPA Practitioner	PE or AICP preferred	7	P.E.	NEPA/NCEPA experience must have required consideration of environmental regulations such as Section 404, Section 4(f), Section 6(f), Section 106 and community issues such as EJ and underserved populations.

**PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS****Tracy Walter (919) 707-6177****HUMAN ENVIRONMENT SECTION (HES)**[twalter@ncdot.gov](mailto:twalter@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
171	Public Involvement						Submit an organizational chart showing key staff with SHORT resumes who are responsible for public involvement. Consultants should also include in their submittal a list of other disciplines with NCDOT with which they are prequalified. Must submit two (2) examples of work. Consultants should demonstrate in their submittal an understanding of how the community impact assessment, public involvement, LEP, Environmental Justice, NEPA and the Clean Water Act work in concert as part of the project development process.
36	Community Impact Assessment	Community Impact Assessment (CIA) is an iterative process to evaluate the direct effects of a transportation action on a community and its quality of life. The assessment process is an integral part of project planning and development that shapes the outcome of a project by raising awareness and understanding of both positive and negative effects of proposed actions on the human (social and economic) environment. Its information is used to guide the project and provide documentation of the current and anticipated social environment of a geographic area with and without the action. CIA uses data analysis as well as broad community interaction to enable informed transportation decision-making in compliance with <a href="#"><u>23 U.S.C. 109(h)</u></a> . The assessment should include all items of importance to people, such as mobility, safety, employment effects, relocation, isolation, and other	Community Planner (CP) or equivalent NEPA Practitioner (NP)				Community Planner/NEPA Practitioner should have prior CIA experience. Without direct experience the practitioner must demonstrate experience in socio-economic impact analysis, multi-modal transportation planning and land use planning, with training in or a demonstrated understanding of NEPA and demographic analysis.  Practitioners without direct experience must also have appropriate education: <ul style="list-style-type: none"><li>• Masters in planning or an allied profession and a year of applicable community planning experience,</li><li>• Bachelors in planning or an allied profession and three years of applicable community planning experience, or</li><li>• Other degree plus seven years of applicable community planning experience</li></ul>

		community issues. CIA also incorporates federal laws and mandates such as Environmental Justice, Limited English Proficiency and the Farmland Protection Policy Act when applicable.		
116	Indirect and Cumulative Effects Assessment	The purpose of an ICE report is to inform the decision-making process regarding which alternatives to carry forward by assessing the potential indirect and cumulative effects based on potential change in land use as a result of the project. The ICE incorporates a matrix tool that considers factors known to influence land use, including the scope of the project, travel time savings, population growth, employment growth, land available for development, water and sewer availability, market for development, development regulations, and the presence of notable environmental features. ICE findings indicate whether further analysis in the form of a Land Use Scenario Assessment (LUSA) is warranted. A LUSA also informs the decision-making process regarding selection of the Recommended Alternative by assessing development potential in identified Probable Development Areas. The Natural Environment Section uses LUSA findings to determine whether ICI water quality modeling is needed for permitting.	Community Planner (CP) or equivalent NEPA Practitioner (NP)	<p>Community Planner/NEPA Practitioner should have prior ICE experience.</p> <p>Without direct experience the practitioner must demonstrate experience in socio-economic growth projection, land use planning and land development, with training in or a demonstrated understanding of NEPA and demographic analysis.</p> <p>Practitioners without direct experience must also have appropriate education:</p> <ul style="list-style-type: none"> <li>• Masters in planning or an allied profession and a year of applicable community planning experience,</li> <li>• Bachelors in planning or an allied profession and three years of applicable community planning experience, or</li> <li>• Other degree plus seven years of applicable community planning experience</li> </ul>
14	Archaeological Resource Surveys	Archaeologist		<p>Key project personnel will meet the qualifications for professional archaeologists as listed in the Secretary of the Interior's Professional Qualification Standards (48 FR 22716). Staff must have experience conducting archaeological investigations in the Southeastern United States. Examples of work and staff resumes must be submitted for review.</p>

106	Historic Architectural Surveys of Standing Structures (Buildings and Bridges)	Standing Structure Surveys	Key project personnel will meet the qualifications for professional architectural historians as listed in the Secretary of the Interior's Professional Qualification Standards (48 FR 22716). Staff must have experience conducting historic architectural investigations in the Southeastern United States. Examples of work and staff resumes must be submitted for review.
253	Preliminary Traffic Noise Analysis (TNA) for NEPA Documents		Modeler must have formal classroom training in FHWA Traffic Noise Model (TNM®) and attend NCDOT Traffic Noise Guidance update meetings as scheduled; Reviewer must have either formal classroom training in FHWA Traffic Noise Model (TNM®) OR must have successfully completed the NHI Highway Traffic Noise (Course # 142051); Both Modeler and Reviewer must be prequalified for Preliminary Traffic Noise Analyses by NCDOT Traffic Noise & Air Quality Group; Examples of work must be submitted for review
441	Design Noise Report		Must meet the requirements for Preliminary Traffic Noise Analysis (TNA) for NEPA Documents. Both Modeler and Reviewer must be prequalified specifically for Design Noise Reports by NCDOT Traffic Noise & Air Quality Group. Must submit examples of work for review.
5	Project-Level Air Quality Analysis		Previous experience in project-level analyses; Analyst must have received formal classroom training in MOVES modeling software; Both Analyst and Reviewer must be prequalified by NCDOT Traffic Noise & Air Quality Group; Must submit examples of work for review.
439	Quantitative Mobile Source Air Toxics (MSAT) Analysis		Must meet the requirements for Project-Level Air Quality Analysis; Analyst must have received formal classroom training in Quantitative MSAT modeling and must have previous experience in performing Quantitative MSAT analyses; Must submit examples of work for review.
440	Quantitative Particulate Matter (PM) Analysis		Must meet the requirements for Project-Level Air Quality Analysis; Analyst must have received formal classroom training in Quantitative PM Hotspot modeling and must have previous experience in performing Quantitative PM analyses; Must submit examples of work for review.
308	Limited English Proficiency (LEP)		Submit an organizational chart showing key staff with SHORT resumes who are responsible for Limited English Proficiency. Consultants should also include in their submittal a list of other disciplines with NCDOT with which they are prequalified. Must submit two (2) examples of Limited English Proficiency work. Consultants should demonstrate in their submittal an understanding of how the community

			impact assessment, public involvement, LEP, Environmental Justice, NEPA and the Clean Water Act work in concert as part of the project development process.
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**PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS****Tracy Walter (919) 707-6177****NATURAL ENVIRONMENT SECTION (NES)**[twalter@ncdot.gov](mailto:twalter@ncdot.gov)

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
243	Threatened and Endangered Species Survey & Studies	Conduct surveys and formulate a Biological Conclusion for Federally Protected plant and animal species in NC	Biologist/ Ecologist		3		Key personnel must have a B.S. in Biology, Ecology or other Natural Resource Management Field. Appropriate licenses for animal collection must be submitted with package if applicable
59	Ecological & Biotic Community Studies	Description and Mapping of plant and animal communities throughout NC.	Biologist/ Ecologist		3		Key personnel must have a B.S. in Biology, Ecology or other Natural Resource Management Field.
280	Wetland and Stream Delineation	Jurisdictional delineation of wetlands and streams. Includes familiarity with USACE and DWQ forms and worksheets including Rapanos.	Biologist/ Ecologist, Soil Scientist		3		Key personnel must have a B.S. in Biology, Ecology or other Natural Resource Management Field, Wetland Delineation Stream Identification, and NCWAM training certificates. PWS preferred.
76	Freshwater Mussel Surveys	Detailed surveys for Protected freshwater mussels throughout NC. Includes snorkel and SCUBA surveys.	Biologist/ Ecologist		3		Appropriate Federal and State Licenses <u>must</u> be submitted with package.
114	ICI Water Quality Assessments	Water Quality modeling associated with community planning Indirect and Cumulative Effects Analysis	Biologist/ Ecologist, Project Manager, Engineer	P.E.	3		Key personnel must have a B.S. in Biology, Ecology or other Natural Resource Management Field with Water Quality models, for example: GWLF.

**PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS****Tracy Walter (919) 707-6177****(NES) ON-SITE SERVICES**[twalter@ncdot.gov](mailto:twalter@ncdot.gov)

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
287	Wetland, Stream and Buffer Permitting	Development of Complete Application, including discussion of all relevant State and Federal issues that affect the permit decision (not just drawings).	Biologist/ Ecologist, Project Manager	P.E.	3		Key personnel must have a B.S. in Biology, Ecology or other Natural Resource Management Field. NEPA, CWA, Riparian Buffer Rules, CAMA training required. NCDOT Plan Reading training preferred.
285	Wetland Mitigation Site Planning	Feasibility and preliminary planning.	Biologist/ Ecologist, Soil Scientist, Engineer	P.E.	3		Key personnel must have a B.S. in Biology, Ecology or other Natural Resource Management Field.
284	Wetland Mitigation Site Design and Construction Assistance & Post-Construction Monitoring		Biologist/ Ecologist, Soil Scientist, Engineer	P.E.	5		Key personnel must have a B.S. in Biology, Ecology or other Natural Resource Management Field. Minimum of at least 2 wetland mitigation restoration projects (minimum of 10 acres each) that included restoration (site grading and planting) of a prior impacted wetland system for compensatory wetland mitigation credits. Include name of project, size, completion date, owner of the project, a description of the work involved with the project, as well as the post-construction monitoring results and mitigation credit release. Projects must be planned, and designed to meet compensatory mitigation requirements of USACE, NCDWQ, and/or NCDCM. Provide additional information as appropriate on up to 5 additional wetland mitigation projects that have been completed, including project name, size, completion date, owner of the project and a description of the work involved with the project. Please provide any additional training/experience that the company has relating to Wetland Restoration and Construction.
227	Stream Biological Monitoring	Benthic Macroinvertebrate collection.	Biologist/ Ecologist		3		Key personnel must have a B.S. in Biology, Ecology or other Natural Resource Management Field. NC DWQ Aquatic Insect Collection certification preferred.
229	Stream Mitigation Site Plan	Feasibility and preliminary planning.	Biologist/ Ecologist, Soil Scientist, Engineer	P.E.	3		Key personnel must have a B.S. in Biology, Ecology or other Natural Resource Management Field.

228	<p><b>Stream Mitigation Site Design and Construction Assistance &amp; Post-Construction Monitoring</b></p> <p>Key personnel must have a B.S. in Biology, Ecology or other Natural Resource Management Field. NC DWQ Aquatic Insect Collection certification preferred. Minimum of at least 2 stream mitigation restoration and/or relocation projects (minimum of 1000 LF each) that included channel reconstruction or relocation based upon natural geomorphic designs incorporating in-stream structures (i.e., rock cross vanes, rock vanes, j-hook vanes, rootwads, etc.) Include name of project, linear feet of stream, completion date, owner of the project, a description of the work involved with the project, as well as the post-construction monitoring results and mitigation credit release. Projects must be planned and designed to meet compensatory mitigation requirements of USACE, NCDWQ, and/or NCDCM. Provide additional information as appropriate on up to 5 additional stream projects that have been completed, including project name, linear feet of stream, completion date, owner of the project and a description of the work involved with the project. Please provide any additional training/experience relating to Stream Restoration and Construction.</p>
	<p>Biologist/ Ecologist, Soil Scientist, Engineer</p> <p>P.E.</p> <p>5</p>

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
31	Cartography	Expressing graphically, usually through maps, the natural and social features of the earth.					Must demonstrate knowledge and experience with digital and/or hard copy map design, map projections, cartographic standards, map book generation and output/presentation methods.
94	Field Date Collection	Plan, manage and execute the spatial acquisition of natural and social features.					Must demonstrate knowledge and experience with spatial data collection including the use of hardware (GPS receivers, hand held computers, pen-based computers, digital cameras, laser instruments) and data collection/mapping software.
87	Data Conversion	Perform data translation from one spatial format (this includes hard and soft copy sources) to another.					Must demonstrate knowledge and experience with different geographic data formats, database formats, geographic/database conversion software, geographic/database conversion coding and spatial data transfer standards (SDTS).
88	Data Validation (QA/QC)	Verify the quality of a spatial product during and/or after its production. This includes the following key elements: Completeness; Validity; Logical Consistency; Physical Consistency; Referential Integrity; Positional Accuracy.					Must demonstrate knowledge and experience with QA/QC processes/methods and data validation procedures.
189	Remote Sensing Data	Collection and interpreting information about the environment and the surface of the earth from a distance, primarily by sensing radiation that is naturally emitted or reflected by the earth's surface or from the atmosphere, or by sensing signals transmitted from a device and reflected back to it. Examples include aerial photography, radar and satellite imaging.					Must demonstrate knowledge and experience with remote sensing images acquired from aircraft, satellites or ground bases, or platforms using visual or computer assisted technology.

## MATERIALS AND TESTS

### LABORATORY SERVICES

Phil Stanberry (919) 329-8495

[pstanberry@ncdot.gov](mailto:pstanberry@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
241	Thermoplastic				3		Key Personnel must be certified to perform the following: AASHTO T-249 and T250; ASTM C-321, C-256, D-36, D-92, D153, D-792, D-1295, D-2240, D-4796, D-3720 or D-4764, and E-1349.
134	Lead-in/Loop Cable				3		Key Personnel must be certified to perform the following: ASTM D-1248, D-4218 and D-1608.
16	Asphalt Materials – Binder & Emulsified				3		Key Personnel must be certified to perform the following: AASHTO T-59 for Emulsion Testing and/or AASHTO R-28, T-44, T-48, T-49, T-51, T-53, T-228, T-301, T-55, T-240, T-313, T-314, T-315 and T-316. Must also provide reference to current accreditation through AMRL or approved equivalent for all test procedures being performed.
146	Paint Coating					6 months	NACE Level 1.
108	Hot Bitumen Adhesive						
91	Glass Beads				3		Key Personnel must be certified to perform the following: EPA Test Method 6010B and Method 3052, ASTM D-1214 and D-1155.
3	Aggregate						Key Personnel must be proficient in conducting the following tests: AASHTO T-11, T-27, R-58 (NCMod), T-88 (NCMod), T-89 (NCMod), T-90 (NCMod) and T-265. Firm's testing facility and equipment will also need to be assessed.
442	Hot Applied Joint Sealer				3		Key Personnel must be certified to perform ASTM D-6690.

**MATERIALS AND TESTS****C.K. Su (919) 329-4150****SOILS LABORATORY SERVICES**[cksu@ncdot.gov](mailto:cksu@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
291	Soils Laboratory Certification (Tier I)						Laboratory and Technician certification for the following AASHTO/NCMod tests: T-11, T-27, R-58 (NCMod), T-88 (NCMod), T-89 (NCMod), T-90 (NCMod), T-265 and M-145. Optional Tests: T-267 and T-289. Firm must be certified by AASHTO Materials Reference Laboratory (AMRL) Accreditation Program. Firm's testing facility and equipment will also need to be assessed.
292	Soils Laboratory Certification (Tier II)						Soils Laboratory Certification (Tier I), plus AASHTO T-99, T-100, T-134, T-193 and ASTM D-1633.
293	Soils Laboratory Certification (Tier III)						Soils Laboratory Certification (Tier I) and (Tier II), plus T-216, T-296 and T-297. Optional Tests: T-208 and T-215.

## MATERIALS AND TESTS

### INSPECTION SERVICES

Phil Stanberry (919) 329-8495

[pstanberry@ncdot.gov](mailto:pstanberry@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
119	Inspection of Prestressed Concrete						Key Personnel must be a certified Concrete Technician Level I.
121	Inspection of QA/QC Asphalt Technician						Key Personnel must have QMS Level II Superpave Certification.
120	Inspection of QA/QC Asphalt Laboratory Equipment						Key personnel must have a Level II Asphalt Certification.
122	Inspection of Structure Coating						Key Personnel must have the following: Certified Welding Inspector in accordance with American Welding Society; Certified Radiography Inspector; Certified Mag Particles Inspector; Certified Ultra Sonic Inspector; Certified Dye Penetrate Inspector; NACE Level I and six (6) months training with experienced coating inspector.
429	Inspection of Timber and Wood Products						
443	Inspection of Structural Steel & Various Other Metal Products						Key Personnel must have the following: Certified Welding Inspector in accordance with American Welding Society; Certified Radiography Inspector; Certified Mag Particles Inspector; Certified Ultra Sonic Inspector; Certified Dye Penetrate Inspector, NACE Level 1.

**PAVEMENT MANAGEMENT UNIT****PAVEMENT MANAGEMENT****Jerry Blackwelder (919) 835-8204**[iblackwelder@ncdot.gov](mailto:iblackwelder@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
152	Pavement Design	Design of concrete and asphalt pavement sections.	Pavement Design Engineer	P.E.	5	P.E.	Must show project experience with Darwin ME. Must submit two (2) sample designs for concrete and asphalt.
150	Pavement Condition Surveys	Pavement distress identification and completion of survey forms.	Senior Technician/ Engineer		2		Must show completion of NCDOT Training course and two (2) years of experience performing NCDOT surveys.
149	Pavement Analysis & Backcalculation	Backcalculations of FWD. Darwin ME overlay calculation	Pavement Design Engineer	P.E.	5	P.E.	Must show project experience with Darwin ME. Must submit two (2) examples of designs for concrete & asphalt.
151	Pavement Deflection & Dynamic Cone Penetration (DCP) Testing	Pavement and soil strength testing and pavement coring.	Project Technician with PE oversight		2		Must have access/ownership to Falling Weight Deflectometer and must provide current calibration reports. Must have access/ownership to a Core Rig for DCP testing.
96	Ground Penetrating Radar and Analysis	Determination of layer thickness.	Project Technician/ Engineer	P.E. or L.G.	5	P.E. or L.G.	Must submit five (5) examples of surveys with analysis and conclusions.
Xxx	Pavement Forensic Investigations	Evaluation of contract documents, construction diaries, materials testing during construction, materials sampling and testing post construction, FWD test interpretation, and development of failure causes and recommended treatments.	Project Engineer	P.E.	5	P.E.	Must submit two (2) reports of contract documents, construction diaries, and materials and test evaluations.

**PAVEMENT MANAGEMENT UNIT****HIGH SPEED DATA COLLECTION****Randy Finger (919) 835-8209**[afinger@ncdot.gov](mailto:afinger@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
404	High Speed Data Collection and Processing	Collection of Pavement Condition and/or Roadside Inventory Information including, but not limited to: Pavement Imagery and Pavement Condition Evaluation, Right-of-Way Imagery, Pavement Profile and Rutting, Skid-testing, Sign and Guardrail Inventory, and Pavement Inventory	Data Collection Technician, Data Manager and Data Analysis	4			Must submit references including contact information from three (3) or more agencies for which data has been collected and description of work performed.
405	Quality Assurance for High Speed Data Collection	Validation (QA/QC) of pavement condition data collected and processed during High Speed Data Collection. Working in conjunction with NCDOT and data collection contractor to address and prevent errors.	Data Analyst	3			Must submit at least one (1) example of previous QA/QC efforts conducted for other agencies. Must submit references with contact information.

## **TRANSPORTATION PLANNING**

**Elena Talanker (919) 707-0911**

### **TRANSPORTATION PLANNING**

[etalanker@ncdot.gov](mailto:etalanker@ncdot.gov)

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
141	Multimodal Transportation Planning						Must show expertise in development of the Transportation Plans which consider various modes of transportation and connections among them, including collection and forecasting of socio-economic data and travel survey data, and public participation for development of a plan.
261	Long Range Transportation Planning						Must show expertise in the development of the Multimodal Long Range Transportation Plans to satisfy Federal regulations. These typically occur in urban areas with greater than 50,000 population.
140	Travel Demand Model Development	Travel Demand model development for small area models (under 50,000) and regional models. Development of a new travel demand model or major/minor update of an existing travel demand model for various sizes of urban area (regional, MPO and non-MPO urban area.)					Must provide a list of travel demand model development projects for which the firm has worked on. Each project must contain: specific staff involved with the project and the role they played in the development; the type and size of the travel demand model (size of study, number of TAZ and major components of model approach); and anything unique or special on these projects. Must provide a list of other areas the firm has specialty (i.e. toll modeling, transit modeling, activity based modeling, etc.). Must list all staff members who will work on travel demand model development projects, including people who provide in-house QA/QC. For each person listed, list travel demand model projects they have worked on and in what capacity. Must have a current TransCAD license.
363	Travel Demand Model Application	Application of existing travel demand models in NC for various purposes, including LRTP Analysis, CTP Analysis, Traffic Forecasting, Air Quality Conformity Analysis and other analyses required by NCDOT: i.e. Transit Ridership Analysis, Sub-area Analysis, Corridor Analysis, Toll Analysis, Travel Demand Management Decisions, Traffic Diversion and Emergency Evacuation Analysis, etc.					Must provide a list of travel demand model application projects for which the firm and current staff have worked on. Each example project must show: specific staff involved with the project and the role they played in the application; the type and size of the travel demand model (size of study, number of TAZ, and other features of the model used); details on how the model was used, what model output was used and for what purpose(s). Must list all staff members who will work on travel demand model application projects, including people who provide in-house QA/QC. For each person listed, list travel demand model projects they have worked on and in what capacity. Must have a current TransCAD license.

6	Air Quality Conformity	Air Quality Conformity analysis is different from the project level noise studies and NEPA air quality studies.	5	Must show expertise and experience performing regional transportation air quality conformity analysis using travel demand model information. Must provide examples of the completed studies, information about the area (urban, MPO, or region), year it was developed and who was the leading expert. Must have a current TransCAD license.
262	Travel Survey		5	Must show expertise and experience performing surveys for travel demand modeling or long range transportation planning, such as household surveys, origin-destination surveys, work place surveys, commercial vehicle surveys, etc. Must demonstrate ability to perform Travel Surveys from beginning to end, including development, distribution, compiling and data analysis. Must provide information about the area of the completed survey (urban area, MPO or region), year it was developed and who was the leading expert.
260	Comprehensive Transportation Planning Development			Must show expertise in development of Multimodal Transportation Plans according to the state CTP requirements.
251	Project Level Traffic Forecasting	Project Level Traffic Forecasting for: (1) areas with a regional model; (2) areas without with a small areas model; and (3) areas without the travel demand model. Specify which type of forecast should be completed. Project Level Traffic Forecasting is different than a traffic impact study or traffic impact analysis. We do not consider these tasks as relevant experience when considering firms qualified for PLTF.		Must have a current TransCAD license. May require to show ability to collect daily, hourly and turning movement counts. Must provide a list of NCDOT TIP projects which the firm has performed with the last 4 years. For each project, list the specific staff involved with the project and the role they played in the development, they type of forecast used (regional model, other model, or did not use travel demand model), and anything special concerning the forecast (complex, urgent turn around, unique, etc.) which show other techniques that may be valuable to bring to the Department. For each person, list the NCDOT TIP projects they have worked on and in what capacity (data collection, analysis, travel demand modeling, figure development, etc.). Must list additional projects firm has completed for other entities.
75	Freight Forecasting			Must show ability to evaluate freight patterns by commodity and mode type between defined units of geography at the county and state level for existing and future road network.
45	Corridor Planning			Must show expertise and experience in corridor planning, coordinating existing and future land use and the multimodal transportation system to provide guidance as development occurs. Must have a current TransCAD license. Must show ability to use TransCAD, Micro Simulation and Public Participation.

**ROADSIDE ENVIRONMENTAL UNIT****David Harris (919) 707-2925****ROADSIDE ENVIRONMENTAL UNIT**[davidharris@ncdot.gov](mailto:davidharris@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
70	Erosion and Sediment Control Design	All services associates with the design of an approved erosion and sediment control plan that meets current standards outlined in the most recent version of the <i>NCDENR – Erosion and Sediment Control Planning and Design Manual</i> for erosion control techniques.	Level III Certified Erosion Control Designer	Required: Level III: Design of Erosion and Sediment Control Plans; CPESC and P.E. are preferred	Designer: 2 Tech: 1		Must submit an organization chart identifying the firms design/monitoring team and their years of experience, applicable registrations, company history involved in this type work, and verify that they are permanent employees of the firm. Must submit at least one (1) key employee who will be responsible for all communication with the Roadside Environmental Unit. For each employee (engineer, biologist or project manager), must submit two (s) examples of NCDOT or similar work that has been approved/reviewed by the Roadside Environmental Unit or other authority. Each sample of work should include: project lists and descriptions, including names and current contact information of clients and owners, resumes, references, certificates, experience descriptions and details, etc. If a firm has previously completed work for the NCDOT, this work will be also considered for prequalification.
231	Stream Restoration/Mitigation Monitoring	All services associated with the stream restoration/ mitigation monitoring work.	Engineer or Biologist		5		Must submit an organization chart identifying the firms design/monitoring team and their years of experience, applicable registrations, company history involved in this type work, and verify that they are permanent employees of the firm. Must submit at least one (1) key employee who will be responsible for all communication with the Roadside Environmental Unit. For each employee (engineer, biologist or project manager), must submit two (s) examples of NCDOT or similar work that has been approved/reviewed by the Roadside Environmental Unit or other authority. Each sample of work should include: project lists and descriptions, including names and current contact information of clients and owners, resumes, references, certificates, experience descriptions and details, etc. If a firm has previously completed work for the NCDOT, this work will be also considered for prequalification.
283	Wetland Restoration/ Mitigation Monitoring	All services associated with the wetland restoration/ mitigation monitoring work.	Engineer or Biologist		5		Must submit an organization chart identifying the firms design/monitoring team and their years of experience, applicable registrations, company history involved in this type work, and verify that they are permanent employees of the firm. Must submit at least one (1) key employee who will be responsible for all communication

		<p>with the Roadside Environmental Unit. For each employee (engineer, biologist or project manager), must submit two (s) examples of NCDOT or similar work that has been approved/reviewed by the Roadside Environmental Unit or other authority. Each sample of work should include: project lists and descriptions, including names and current contact information of clients and owners, resumes, references, certificates, experience descriptions and details, etc. If a firm has previously completed work for the NCDOT, this work will be also considered for prequalification.</p>
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**RAIL DIVISION****Greg Keel (919) 715-7892****RAIL-HIGHWAY CROSSING**[gkeel@ncdot.gov](mailto:gkeel@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
182	Railroad Crossing Signal & Traffic Engineering Services	Civil design of grade crossing separation projects.	Project Engineer	P.E.	5	P.E.	Must show experience in design of civil plans for highway-rail grade crossing signals/gates projects at multiple locations. Must show experience in design of railroad-preempted traffic signals. Must have at least one registered PE with experience in grade crossing signals. Must have at least one registered PE with experience in railroad-preempted traffic signals.
		Electrical design of grade crossing signals/gates projects.	Project Engineer		10		Must show experience in design of electrical/electronic highway-rail grade crossing signals/gates systems. Experience must include track circuits, train detection/crossing control systems, wiring of flashing light signals and gates, and all other elements necessary for a fully functional automatic grade crossing warning system in accordance with host railroad and NCDOT standards and specifications. P.E. not required, but desired.
		Other traffic engineering services.	Project Engineer	P.E.	5	P.E.	Must show experience with traffic capacity analysis, traffic safety analysis, and highway-rail crossing inventory in accordance with FRA and NCDOT standards and specifications.
255	Traffic Separation Studies & Crossing Evaluation Studies		Project Engineer	P.E.		P.E.	Roadway design experience required. Experience in feasibility studies is a plus, but not a requirement. Experience in railroad work is plus, but not a requirement.
468	Rail Crossing Data Acquisition/Management		Project Engineer	P.E.		15	Must have extensive experience and demonstrable expertise in the railroad industry specific to crossing safety planning, education, construction, and contract administration, including demonstrated communications skills in negotiating and facilitating crossing project scopes.

**RAIL DIVISION****Greg Keeel (919) 715-7892****RAIL ENGINEERING**[gkeel@ncdot.gov](mailto:gkeel@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
394	Industrial and Yard Track Design and Layout						Must show recent project experience related to the design and layout, from preliminary through final design and construction, of industrial and yard tracks.
395	Freight Main Track Design and Layout						Must show several examples of recent project experience related to the design and layout of freight railroad main track and siding design.
396	Inter-city Passenger and HSR Design and Layout						Must show several examples of recent project experience related to the design and layout, from preliminary through final design and construction, of intercity passenger and high speed rail track design.
397	Rail Transit Design and Plans Review						Must show recent project experience related to the design of rail transit projects. In addition, design review contracts should be noted when completed for rail transit stakeholders as this is required for prequalification under this code.
183	Railroad Communications and Signal System Design						Must show project experience in designing discipline components and projects for Class I railroads.
191	Review of Railroad Engineering Drawings, Standards & Specifications						Must show project experience as a reviewer of drawings, standards, and specifications for rail improvement project stakeholders and owners. More than one review contract in recent history is desirable.
176	Rail Construction Project Inspection & Management						Must show the presence of a current safety program, familiarity with railroad construction means and methods, and experience inspecting railroad construction projects for Class I railroads.
178	Rail Corridor Traffic Modeling & Capacity						Must show experience related to rail traffic modeling and capacity studies with recent project history given.

483	<p><b>Rail Engineering Contracts and Agreements and Business Practices</b></p> <p>Develop and review contracts and agreements for rail engineering, planning, crossing safety, and operations and facilities in support of NCDOT rail programs; review Rail business practices to ensure compliance with NCDOT policies and procedures.</p>		5	5	<p>Must have experience and expertise in the transportation industry specific to contracts and agreements. Should have experience with NCDOT business practices. Experience with SAP (as it relates to NCDOT) is desirable.</p>
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## RAIL DIVISION

### PROJECT PLANNING

**Greg Keel (919) 715-7892**

[gkeel@ncdot.gov](mailto:gkeel@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
180	Rail Functional and Preliminary Design						Must show project experience in rail design at the concept and functional level, to include recently completed projects related to new location or existing alignment improvements. Alternatives analysis history is also desired as it demonstrates the firm's ability to propose various solutions for complex issues.
234	Studies of Economic & Fiscal Impact of Rail Related Activities	Economic analysis of rail related activities.			5		Must show substantial experience estimating direct and in-direct cash inputs to local and regional economies, job creation and other economic impacts resulting from passenger rail and freight rail related activities.
52	Demand Modeling, Ridership, Revenue, Operating Costs for Commuter & Intercity Passenger Rail Operations	Ridership/Revenue modeling for passenger rail systems.			10		Must show substantial experience performing ridership/revenue modeling and forecasting for passenger rail service, including familiarity with the eastern seaboard and Northeast rail corridor.
257	Train Performance & Rail Line Capacity Analysis	Train Performance Calculation and Capacity Modeling.			5		Must show substantial experience performing all aspects of Train Performance Calculation as well as Capacity Modeling for passenger and freight rail systems.
238	Technical & Negotiation Assistance in Securing Rail Lines or Corridors				5		Must show experience in the valuation of railroads, both active and inactive, including corridors and miscellaneous property and rolling stock. Must show experience in negotiations with Class 1 and short-line railroads regarding purchases of right-of-way, equipment, and business interests.
437	Viability Analysis & Support Work for Railroad Related Projects	Activities related to the determination of viability and/or feasibility of rail related projects, both freight and passenger, from the standpoint of: logistics, alternatives analysis, intermodal relationships, performance, economics, regulatory compliance, and					Must show expertise and substantial railroad (passenger and/or freight) related experience in at least one of the following areas: planning, design, operations, maintenance, inspection, regulatory compliance, logistics, intermodal, economic analysis, performance evaluation, coordination/communications, staff support, or related fields as appropriate to specific project needs.

	other related disciplines. It also covers support areas involving applications and agreements preparation, performance metrics, and all aspects of the rail planning process, both direct and indirect (as in rail-related aspects of "non-rail" transportation projects, such as scoping needs for highway projects that interface with the rail system).

**RAIL DIVISION****Greg Keel (919) 715-7892****OPERATIONS FACILITIES DESIGN AND MANAGEMENT**[gkeel@ncdot.gov](mailto:gkeel@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
148	Passenger Station Design						
107	Historic Passenger Station Renovations						
147	Passenger Platforms						
41	Construction Administration						
137	Maintenance Facility						
179	Rail Facilities						
181	Rail Sidings						
177	Rail Corridor Maintenance Assessments, Surveys and Lease Studies						
469	Rail Car Lean Tests/High Cant Deficiency	NCDOT is required by the FRA to demonstrate compliance of equipment operating in <i>Piedmont</i> service to 49 CFR Part 213, Section 213.57(b) and (d) for maximum cant deficiencies of 3 and 4 inches at operating curving speeds. NCDOT Collects data from static lean testing and route testing to confirm the steady state roll angles, which are suitable for NCDOT equipment to	Project Engineer	P.E.	7	P.E.	Must show experience in interpreting 49 CFR Part 213, Section 213.57(b) and (d) for maximum cant deficiencies of 3 and 4 inches at operating curving speeds.

		operate at 3 and 4 inch cant deficiencies.			
470	Rail Car Asbestos Abatement	NCDOT typically purchases heritage style railroad passenger cars originally built in the 1950's and 1960's, which contain high levels of asbestos in insulation, floor tiles, walls, and ceiling coatings. Abatement of these materials is required before refurbishment can proceed on any NCDOT owned railcar. NCDOT contracts with approved hazardous material specialists to remove and dispose of any asbestos laden material before cars are transferred to a refurbishment shop.	NC Accredited Asbestos Abatement Supervisor, NC Accredited Asbestos Abatement Worker, NC Accredited Air Monitor	NC Accredited Asbestos Worker	NC General Contractor's License Must show several examples of recent project experience related to asbestos abatement in railroad passenger cars.
471	Rail Ride Quality Testing	To ensure the best possible quality of ride for passengers on NCDOT equipment and as a maintenance tool, NCDOT occasionally conducts ride quality testing along the <i>Piedmont</i> route. NCDOT conducts dynamic state testing utilizing accelerometers mounted to the railcar truck frames and car bodies. This data is collected and analyzed to identify potential equipment maintenance issues or locations of track deficiencies based on locations and trends of above average recorded G loads.	Project Engineer	P.E. 5	P.E. 5
472	Rail Lighting/Signage Testing	NCDOT equipment must comply with and meet all FRA regulations and APTA standards for lighting levels and signage requirements on passenger equipment. NCDOT conducts lighting and signage assessments after refurbishment programs conclude. NCDOT conducts various tests to ensure light levels in various parts of the passenger cabin are	Project Engineer	P.E. Desirable 5	P.E. 5

		above the minimum federally mandated levels for luminosity, emergency lighting meets federal requirements for time and luminescence, and emergency signage placements meet FRA and APTA requirements.		
473	Rail Fire Safety Analysis	NCDOT conducts fire safety analysis on all materials used in its rail passenger cars during the refurbishment process and when new material types are incorporated into the railcar passenger area. Fire analysis is required by 49 CFR 238.103 (d) for in service railroad passenger equipment. Information is obtained on material from providers and vendors, consultants examine physical properties within each car, and consultants determine whether any material included in any NCDOT rail passenger car might pose a fire safety risk, which may affect the overall equipment operation.	Project Engineer P.E.	7 P.E.
474	Rail Alternative Fuels	NCDOT has been working with the NCSU Environmental Engineering (EE) Department to test the performance of our locomotives on various blends of biodiesel fuel, with the intent of reducing fuel emissions and thus creating a more "green" program. To date locomotives have been tested with biodiesel fuel blends ranging from 10-60% biodiesel, with future plans to continue testing one locomotive to 100% biodiesel fuel. NCDOT will also be evaluating other alternative fuels, including but not limited to, Liquid Natural Gas and Fuel Cell/Hydrogen Technologies.	Project Engineer P.E. Desirable	7 PhD or P.E.

475	Positive Train Control (PTC)	<p>Support development of a Positive Train Control Development Plan (PTCDP), which is necessary for compliance with 49CFR236. This development plan will address the locomotive requirements, as part of the full PTCDP implementation. The scope of services includes development of PTC Implementation Plan, Safety Plan, Training Program and Maintenance Program Integration.</p> <p>Provide NCDOT guidance on issues related to the congressional mandate requiring US railroads to implement Positive Train Control (PTC) by December 2015. Provides updates on the status of regulatory requirements being developed by the Federal Railroad Administration (FRA) and how those requirements may pertain to current and planned NCDOT passenger train operations. Provides input and recommendations as part of the development of PTC regulations as per the FRA process. Provides NCDOT representation at PTC conferences and meetings with FRA, Norfolk Southern, CSX and Amtrak. Provides updates/presentations to Department staff and/or other stakeholders relative to pending PTC regulatory requirements. Produce recommendations for grade crossing protection for integration into the PTC system. Produces equipment specifications and installation schedule for NCDOT locomotives, as well as provide installation and implementation oversight services.</p>	Project Engineer	P.E.	7	P.E.
476	Track Design Services	Includes the NCDOT Preserved Corridors, Train Stations, and Locomotive & Railcar	Project Engineer	P.E.	5	P.E.

Must show recent project experience related to the design and layout, from preliminary through final design and construction, of industrial, passenger station and yard tracks.

		Maintenance Facilities.			
477	Rail Architectural Services	Specific to rail passenger train stations or Locomotive and Railcar Maintenance Facilities.	Project Manager	A.I.A.	A.I.A.
478	Reliability Centered Maintenance (RCM)	Technical Support to assess maintenance services for the NCDOT <i>Piedmont</i> Service. Tasks include, but are not limited to, Life Cycle Maintenance Projections, Maintenance Plan Efficiencies, evaluation of potential cost reductions, evaluation of current Planned Maintenance Program and identification of Predictive Maintenance (PdM) and/or Condition Based Maintenance Program.	Project Manager	P.E. Preferred	P.E. Preferred

**RAIL DIVISION****Greg Keel (919) 715-7892****RAIL SAFETY OVERSIGHT**[gkeel@ncdot.gov](mailto:gkeel@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
457	Safety Oversight of Rail Fixed Guideway Systems	Safety oversight of rail transit systems and freight railroads through the enforcement and administration of pertinent federal regulations.	Task Manager		5		Must show experience in interpreting, enforcement and administration of Title 49 CFR Transportation Part 659 and associated Parts applicable to the Federal Transit Administration's State Safety Oversight Program.

## **PROGRAM DEVELOPMENT**

### **PROJECT PLANNING**

**Derrick Lewis (919) 707-4663**

**dlewis@ncdot.gov**

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
200	Feasibility Studies						Must show experience in performing detailed Highway Capacity analysis, including mainline analysis (two lane, multilane, arterial & freeway), interchanges, intersections and roundabouts, as well as traffic simulations using advanced traffic modeling software. Must show experience in performing interchange modification and justification studies and preparing conceptual and functional roadway designs using minimal information. Must show experience in performing and documenting NEPA planning documents on various types of improvements.

**VALUE MANAGEMENT UNIT****Robert Hayes (919) 707-4812****VALUE MANAGEMENT**[rhayes@ncdot.gov](mailto:rhayes@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
79	General Meeting Facilitation						
226	Strategic Planning						
373	Team Leader			PE			
374	Team Facilitator			CVS			
375	Partial VE Study Team: Roadway Design Engineer			PE			
376	Partial VE Study Team: Hydraulics Design Engineer			PE			
377	Partial VE Study Team: Structure Design Engineer			PE			
378	Partial VE Study Team: Geotechnical Design Engineer			PE			
379	Partial VE Study Team: Traffic Operations Engineer			PE			
380	Partial VE Study Team: Project Estimator			PE			
381	Partial VE Study Team: Roadway Construction Engineer			PE			

382	Partial VE Study Team: Bridge Construction Engineer		PE
383	Roadway Maintenance Engineer		PE
384	Bridge Maintenance Engineer		PE
385	Entire VE Study Team		PE
386	Constructability Expert		
387	Complementary Service: Information Gathering		
388	Complementary Service: Provide Facility for Team Studies		
389	Complementary Service: Prepare VE Study Report		
390	Complementary Service: Formal Presentation		
391	Complementary Service: Development of Implementation Plans		
392	Procedure Development & Documentation		
393	Value Engineering Training		CVS
484	Partial VE Study Team: Project Development/Planning/Env.		
485	Resource Conservation Expert		

**UTILITIES UNIT****Roger Worthington****(919) 707-6975****UTILITY ENGINEERING**[rworthington@ncdot.gov](mailto:rworthington@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
173	Public Water Distribution Systems	Analysis of existing Public Water Distribution Systems for conflicts with highway project construction. Design and development of Utility Construction Plans for resolving these conflicts.					Must submit samples of reports of water line analysis. Must submit plans and specifications demonstrating design of water line relocations.
174	Public Water Transmission Systems	Analysis of existing Public Water Transmission Systems (24" minimum diameter) for conflicts with highway project construction. Design and development of Utility Construction Plans for resolving these conflicts.					Must submit samples of reports of water transmission analysis. Must submit plans and specifications demonstrating design of water line relocations.
203	Sanitary Sewer Collection Systems	Analysis of existing Sanitary Sewer Collection Systems for conflicts with highway project construction. Design and development of Utility Construction Plans for resolving these conflicts.					Must submit samples of reports of sanitary sewer line analysis. Must submit plans and specifications demonstrating design of sanitary sewer relocations.
204	Sanitary Sewer Outfall Systems	Analysis of existing Sanitary Sewer Outfall Systems (24" minimum diameter) for conflicts with highway project construction. Design and development of Utility Construction Plans for resolving these conflicts.					Must submit samples of reports of sanitary sewer outfall analysis. Must submit plans and specifications demonstrating design of sanitary sewer outfall relocations.

**UTILITIES UNIT**  
**UTILITY COORDINATION**

**O'Hara Parker**      **(919) 707-7171**

**oparker@ncdot.gov**

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
270	Utility Coordination	Analysis of existing overhead and underground dry utilities for conflicts within highway project construction. Identification of ROW/PUE requirements. Design and development of Utility by Others plans by obtaining owner concurrence for proposed utility relocations.					Must submit samples of reports of any project where a utility analysis and preliminary routing was designed for electrical, gas and telephone facilities.

**RIGHT OF WAY UNIT****Neil Strickland (919) 707-4364****RIGHT OF WAY**[nstrickland@ncdot.gov](mailto:nstrickland@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
194	Right of Way Negotiators	Right of Way Negotiator	Real Estate Broker's License	Real Estate Broker's License	Must submit resume and experience of firm and all staff that perform this work.	Real Estate Broker's License	Must submit resume and experience of firm and all staff that perform this work.
192	Right of Way Appraisals	Right of Way Appraiser	Appraiser's License	Real Estate Broker's License	Must submit resume and experience of firm and all staff that perform this work.	Real Estate Broker's License	Must submit resume and experience of firm and all staff that perform this work.
186	Relocation Assistance			Real Estate Broker's License	Must submit resume and experience of firm and all staff that perform this work.	Real Estate Broker's License	Must submit resume and experience of firm and all staff that perform this work.
13	Appraisal Review			Real Estate Broker's License	Must submit resume and experience of firm and all staff that perform this work.	Real Estate Broker's License	Must submit resume and experience of firm and all staff that perform this work.
185	Relocation Review			Real Estate Broker's License	Must submit resume and experience of firm and all staff that perform this work.	Real Estate Broker's License	Must submit resume and experience of firm and all staff that perform this work.
168	Project Management			Real Estate Broker's License	Must submit resume and experience of firm and all staff that perform this work.	Real Estate Broker's License	Must submit resume and experience of firm and all staff that perform this work.
170	Property Management			Real Estate Broker's License	Must submit resume and experience of firm and all staff that perform this work.	Real Estate Broker's License	Must submit resume and experience of firm and all staff that perform this work.

**RIGHT OF WAY UNIT****Neil Strickland      (919) 707-4364****LEAD PAINT**[nstrickland@ncdot.gov](mailto:nstrickland@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
339	Lead Paint Testing			NC Accredited Lead Paint Professional Certification	5		Key person must be computer literate.
340	Lead Paint Abatement			NC Accredited Lead Paint Professional Certification	5		Key person must be computer literate.

**RIGHT OF WAY UNIT****MOLD****Neil Strickland      (919) 707-4364**[nstrickland@ncdot.gov](mailto:nstrickland@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
341	Mold Testing				5		Key person must be computer literate.
342	Mold Remediation				5		Key person must be computer literate.

**RIGHT OF WAY UNIT****Neil Strickland (919) 707-4364****ASBESTOS**[nstrickland@ncdot.gov](mailto:nstrickland@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
343	Asbestos Survey	Inspection		NC Accredited Asbestos Professional Certification	5		Key person must be computer literate.
344	Asbestos Abatement			NC Accredited Asbestos Professional Certification	5		Key person must be computer literate.
345	Asbestos Awareness Training			NC Accredited Asbestos Professional Certification	5		Key person must be computer literate.

**DIVISION OF AVIATION****Jennifer Fuller (919) 814-0550****DIVISION OF AVIATION**[jmfuller@ncdot.gov](mailto:jmfuller@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
11	Airport System Planning	Planning a system of airports on a regional or statewide basis. Analysis of previous State Aviation System Plans as well as existing individual Airport Master Plans and as-built drawings, collection of operational data, activity forecasting and demand-capacity analysis.	Project Manager	P.E. or Certified Planner	P.E. or Certified Planning	Must submit three (3) projects completed within the last five (5) years conforming to FAA Advisory Circular 150/5070-7 'The Airport System Planning Process' that are related to Airport System Planning, as well as any projects/studies relating to Advisory Circular 150-5070-6B 'Airport Master Plans' greater than \$500,000 and provide the following for each project/study: project name and owner, number/type of airports in system, Owner reference/evaluation, commencement and completion dates, and contract value. Must show preparation of a scope of work which has critical review points for both State and FAA input. Must state whether firm has defaulted or failed to complete contractual obligations with the last 10 years, whether firm has ever been terminated due to the quality of their work, and must provide surety information (name, rating and limits). Must submit equipment for field observations.	
10	Airport Planning/Design/Engineering	Planning and designing an airport conforming to FAA Standards. Analysis of a current Airport Master Plan and as-built drawings, collection of operational data, activity forecasting and demand-capacity analysis.	Project Manager	P.E.	P.E.	Must submit three (3) projects completed within the last five (5) years conforming to both FAA Advisory Circular 150/5300-13 'Airport Design' standards and Advisory Circular 150-5070-6B 'Airport Master Plans' greater than \$250,000 and provide the following for each project: project name and owner, type of airport (Air Carrier or General Aviation), owner reference/evaluation, commencement and completion dates, and contract value. Must show preparation of a scope of work which has critical review points for Local, State and FAA input. Must state whether firm has defaulted or failed to complete contractual obligations with the last 10 years, whether firm has ever been terminated due to the quality of their work, and must provide surety information (name, rating and limits). Must submit equipment for field observations. Must show knowledge of FAA Runway Safety Publications and had initial or recurrent training for CFR Part 130.303.	
9	Airfield Pavement Management System	Management of Airport Concrete and Asphalt Pavements utilizing Pavement Condition Index (PCI) Surveys and Software. Analysis of current/previous	Project Manager	P.E.	P.E.	Must show that firm is familiar with all FAA Advisory Circulars related to Airport Pavement Design, PCI Survey Procedures (ASTM D5340-98). Must submit three (3) PCI Survey projects completed within the last five (5) years conforming to FAA, US Army Corp., or AASHTO standards greater than \$250,000 and provide the following	

	as-built drawings and specifications, collection of inspection data utilizing a PCI survey procedure to objectively determine the functional and structural condition of a pavement.	for each project: project name and owner, pavement thickness/type, owner reference/evaluation, commencement and completion dates, and contract value. Must provide written approach to PCI Survey Procedure including number of teams, visual inspection methods and recording distress information (distress type, quantity and severity), reports and management of airfield pavement surveys to ensure project compliance. Must state whether firm has defaulted or failed to complete contractual obligations with the last 10 years, whether firm has ever been terminated due to the quality of their work, and must provide surety information (name, rating and limits). Must submit equipment for field observations. Must show knowledge of FAA Runway Safety Publications and had initial or recurrent training for CFR Part 130.303.
17	Aviation Economic Impact	<p>Project Engineer, Economist or Certified Planner</p> <p>Examine and determine the economic impact of commercial and general aviation airports, as well as aviation activities in general, both on the statewide, regional and local/county levels. Analyze any previous Aviation Economic Impact studies, whether on a statewide, regional or local/county level, collect data affecting the economic impact of public airports from airport related business and tenants, collect and analyze economic data from individuals and businesses who utilize the airport by accepted means and determine the total economic impact and present data in an effective format.</p>
142	Airport NAVAIDS/Procedure Development	<p>P.E., Licensed Electrical</p> <p>Project Engineer</p> <p>Airport Electronics and Navigational Aids (NAVAIDS), Airspace Obstacle Analysis and TERPS (Terminal Instrument Procedures) Analysis.</p> <p>Analyze requirements for locating and siting, on an individual airports basis, ADS-B, VORs, Localizers, Glideslopes, AWOS, ASOS, ATIS, RCO and GCO, and development of IAP (Instrument Approach Procedures) based upon proposed installation of NAVAIDS.</p>

				submit equipment for field observations and obstruction identification and analysis. Must show knowledge of FAA Runway Safety Publications and had initial or recurrent training for CFR Part 130.303.
7	Air Service Studies	Examine and determine the status of scheduled commercial air service upon an airport and it's ground service area and project impacts of improved and/or new service destination markets, economic impact of improved or new scheduled service, on airports , as well as aviation activities in general, both on the statewide, regional and local/county levels. Analyze any previous Air Service Impact studies, whether on a statewide, regional or local/county level, collect data showing the impacts in utilization of improved or new service that was implemented by a scheduled air carrier, collect and analyze economic data from individuals and businesses who utilize the air service by accepted and present data in an effective format.	P.E., Economist or Certified Planner	P.E., Economist or Certified Planner  Must be familiar with the dynamics and economics of the Commercial Air Service Industry, the USDOT/OST Office of Aviation Analysis, FAA Advisory Circulars and Reports that have relational material dealing with Impacts of Commercial Air Service. Must submit three (3) Air Service Impact Studies completed within the last five (5) years greater than \$250,000 and provide the following for each project: project name and owner, number and type of airports in study, Owner reference/ evaluation, commencement and completion dates, and contract value. Must submit a preparation of a scope of work which has critical review points for both Airport Client and State. Must state whether firm has defaulted or failed to complete contractual obligations with the last 10 years, whether firm has ever been terminated due to the quality of their work, and must provide surety information (name, rating and limits).
4	Air Cargo Studies	Examine and determine the status of air cargo service upon an airport and it's ground service area and project impacts of improved and/or new air cargo service destination markets, economic impact of improved or new air cargo service on airports , as well as aviation activities in general, both on the statewide, regional and local/county levels. Analyze any previous Air Cargo Impact studies, whether on a statewide, regional or local/county level, collect data showing the impacts in utilization of improved or new service that was implemented by an air cargo carrier, collect and analyze economic data from individuals and businesses who utilize	P.E., Economist or Certified Planner	P.E., Economist or Certified Planner  Must be familiar with the dynamics and economics of the Air Cargo Service Industry, the USDOT/OST Office of Aviation Analysis, FAA Advisory Circulars and Reports that have relational material dealing with Impacts of Air Cargo Service. Must submit three (3) Air Cargo Service Impact Studies completed within the last five (5) years greater than \$250,000 and provide the following for each project: project name and owner, number and type of airports in study, Owner reference/ evaluation, commencement and completion dates, and contract value. Must submit a preparation of a scope of work which has critical review points for both Airport Client and State. Must state whether firm has defaulted or failed to complete contractual obligations with the last 10 years, whether firm has ever been terminated due to the quality of their work, and must provide surety information (name, rating and limits).

		the air cargo service by accepted and present data in an effective format.	
74	Aviation Flight Operations Management	<p>Serves as Chief Pilot in a supervisory and administrative position managing and coordinating the flight operations and maintenance of an aviation department. Supervise, plan, direct, review and evaluate the work of subordinates. Responsible for developing flight schedules. Normally flies both helicopters and fixed wing aircraft. Review and authorize changes to the flight schedule, develop and make changes to methods, procedures, operations, training and maintenance, and establish policy and procedures.</p>	<p>Must have thorough knowledge of the FAA and FCC rules and regulations, and State Statutes governing the operation and maintenance of aircraft. Graduation from high school and a minimum of 2,000 hours of flight time in a closely related type of aircraft and/or type of mission, along with a minimum of six years of related experience. Certification as a FAA commercial or air transport pilot in airlines and/or rotorcraft, and possession of an FAA Class II Medical Certificate. Also required are ratings in multi-engine (land), instrument flying and others as designated. Good flying safety record, no reportable incidences or accidents in the last 10 years. No FAA incidences or violations in the last 10 years. No failed FAA or military flight evaluations. Must have single and multi-engine fixed and /or rotary wing aircraft.</p>
71	Aviation Executive Pilots (Captains & F.O.)	<p>Pilot single or twin engine, fixed and/or rotary wing aircraft, in a variety of mission flights including point to point passenger flights, photogrammetry, and occasional search and rescue. Conduct pre-flight and post-flight inspections of aircraft and note all discrepancies in a maintenance log, and maintain all other necessary logs and reports related to their flights. Work includes planning flights considering weather, navigational aids, routing, altitudes, alternative routes and destinations, loading and weight distribution, fuel requirements, and the filing of IFR flight plans as necessary. Perform piloting assignments as pilot in command and does not normally have any direct supervision available. Operation manual details the rules and regulations of procedures, conduct, training, flight operations, flight crew coordination and operational limitations of equipment.</p>	<p>Must have thorough knowledge of the FAA and FCC rules and regulations, and State Statutes governing the operation and maintenance of aircraft. Graduation from high school and a minimum of 1,500 hours of flight time in a closely related type of aircraft and/or type of mission, along with a minimum of six years of related experience. Certification as a FAA commercial or air transport pilot in airlines and/or rotorcraft, and possession of an FAA Class II Medical Certificate. Also required are ratings in multi-engine (land), instrument flying and others as designated. Good flying safety record, no reportable incidences or accidents in the last 10 years. No FAA incidences or violations in the last 10 years. No failed FAA or military flight evaluations. Must have single and multi-engine fixed and /or rotary wing aircraft.</p>

8	Aircraft Maintenance	<p>Aircraft mechanic for fixed wing and/or rotary aircraft. Work involves the inspection, maintenance, modification, and repair of airframes, power plants and related systems for fixed wing and/or rotary aircraft. Expected to independently perform routine work, research maintenance and service manuals and complete all necessary repair/inspection reports and entries.</p>	<p>Must have thorough knowledge of the FAA and FCC rules and regulations, and State Statutes governing the operation and maintenance of aircraft. Graduation from an FAA approved aviation maintenance school and one year of experience in aircraft inspection, maintenance and repair; or graduation from high school and three years of related experience; or an equivalent combination of training and experience. Possession of a valid FAA Airframe and Power plant license. Working knowledge of the tools, equipment and methods used in the inspection, maintenance and repair of aircraft. Working knowledge of FAA rules and regulations concerning aircraft inspection and repair. Ability to read and interpret technical manuals and troubleshoot technical problems and complete repairs. Good communication with others to ensure safe operations and good situational awareness will be maintained during all maintenance procedures. No reportable incidents or accidents in the last 10 years. FAA rules and regulations require most maintenance repair and inspection jobs, be certified that the mechanic's work is in compliance with these rules and regulations. On major overhauls, repairs, and alterations or inspections, the work must reviewed and certified by an Inspector (IA Certification) authorized by the FAA. No FAA incidences or violations in the last 10 years.</p>
73	Flight Operations/Training	<p>Trained to fly and fix the division's aircraft. Self-study and attend certified vendors of semi-annual and annual training. Fly and maintain single and multi-engine fixed and/or rotary wing aircraft.</p>	<p>Certification as a FAA commercial or air transport pilot in airlines and/or rotorcraft. Also required are ratings in multi-engine (land), instrument flying and others as designated. Possession of a valid FAA Airframe and Power plant license. Ability to attend training and pass the course syllabus for single and multi-engine fixed and/or rotary wing aircraft. Good flying safety record, no reportable incidences or accidents in the last 10 years. No FAA incidences or violations in the last 10 years.</p>
20	Avionics System Development	<p>Project Engineer</p>	<p>P.E., Electronics or Scientific reference/evaluation, commencement and completion dates, and contract value. If airport airside access is necessary, must show knowledge of FAA Runway Safety Publications and had initial or recurrent training for CFR Part 130.303. Must state whether firm has defaulted or failed to complete contractual obligations with the last 10 years, whether firm has ever been terminated due to the quality of their work, and must provide surety information (name, rating and limits). Must submit equipment for development and testing of NextGen Navigational Aids.</p>

12	Airspace Analysis	Development of Airspace Analysis/Classification Studies. Analyze existing and proposed Airspace Classifications (Class A through Class G), requirements for locating and siting, on an individual airports basis. Provide written approach to management of Airspace Study to ensure project compliance.	Project Engineer P.E.	Must submit three (3) Studies/Projects completed within the last five (5) years conforming to Federal Aviation Regulation (FAR) Part 91, 'General Operating and Flight Rules', Parts 71, 'Designation of Class A, B, C, D, and E Airspace Areas; Airways; Routes; and Reporting Points', Part 73, 'Special Use Airspace', Part 77, 'Objects affecting navigable airspace' and all FAA Advisory Circulars, Reports and Orders related to Airport Airspace, knowledge of FAA Airways Terminal Instrument Procedures (TERPS) methods and practices, greater than \$250,000 and provide the following for each project: project name and owner, number/type of navigational aids, Owner reference/evaluation, commencement and completion dates, and contract value. If airport airside access is necessary, must show knowledge of FAA Runway Safety Publications and had initial or recurrent training for CFR Part 130.303. Must state whether firm has defaulted or failed to complete contractual obligations with the last 10 years, whether firm has ever been terminated due to the quality of their work, and must provide surety information (name, rating and limits). Must submit surveying tools/equipment for field observations and obstruction identification and analysis if necessary.
19	Airport Safety Analysis/Inspection	Perform Safety Inspection of Airports. Perform FAA Airport Master Record Inspection per FAA Office of Aeronautical Information Services, FAA Order 5010.4, 'Airport Safety Data Program', reporting findings and data in an effective format to the NFDC (National Flight Data Center). Provide written approach to airport inspection procedure to ensure project compliance.	Trained Airport Safety Data Inspector	Must be familiar with FAA Office of Aeronautical Information Services, FAA Order 5010.4, 'Airport Safety Data Program', Advisory Circular 150/5300-13, 'Airport Design' and all Orders/Reports related to airport inspection, successful graduate of FAA mandated training seminar in FAA Form 5010-1 Airport Inspection Procedures, and provide a list of previous 5010 Inspections and the following for each airport: project name and owner, number of inspections performed, Owner reference/evaluation, commencement and completion dates, and contract value. Must be knowledgeable of FAA Runway Safety Publications and had initial or recurrent training for CFR Part 130.303. Must state whether firm has defaulted or failed to complete contractual obligations with the last 10 years, whether firm has ever been terminated due to the quality of their work, and must provide surety information (name, rating and limits). Must submit surveying equipment for field observations.
430	Airport Pavement Design	Design of Airport Concrete and Asphalt Pavements. Rigid and Flexible Pavement Sub-base Courses, Treated Subgrade, Sub-base Courses, Base Course, Treated Base Courses on active airfield runway, taxiway and apron. Provide written approach to design and management of airfield paving projects to ensure project compliance.	Project Engineer P.E.	Must be familiar with all FAA Advisory Circulars, Reports and Orders related to Airport Pavement Design. Must submit three (3) Design Projects conforming to FAA, US Army Corp or AASHTO standards greater than \$500,000 and provide the following for each project: project name and owner, pavement thickness, Owner reference/evaluation, commencement and completion dates, and contract value. If airport airside access is necessary, knowledgeable of FAA Runway Safety Publications and had initial or recurrent training for CFR Part 130.303. Must state whether firm has defaulted or failed to complete contractual obligations with the last 10 years, whether firm has ever been terminated due to the quality of their work, and must provide surety information (name, rating and limits). Must submit

				a list of available specialized testing equipment for both Concrete and Asphalt Pavement projects.
431	Airport Construction Admin/ Inspection	Inspection of Airport Construction, Supervision of work performed by all Contractors. Perform Construction Administration and Inspection of work performed by all Contractors on a project according to FAA, AASHTO, Codes and Applicable Industry Standards, reporting findings and data in an effective format to comply with Project Specifications and Compliance. Provide written approach to airport construction admin and inspection procedures to ensure project compliance.	Project Engineer P.E.	P.E. Must be familiar with FAA Advisory Circular 150/5370-12A, 'Quality Control of Construction', Advisory Circular 150/5370-10F(Draft), 'Standards for Specifying Construction of Airports', and all FAA Orders/Reports/Engineering Guidance Bulletins related to airport construction inspection, and the following for each Airport Construction Admin/Inspection performed: project name and owner, number of inspections performed, Owner reference/evaluation, commencement and completion dates, and contract value. Knowledge of FAA Runway Safety Publications and had initial or recurrent training for CFR Part 130.303. Must state whether firm has defaulted or failed to complete contractual obligations with the last 10 years, whether firm has ever been terminated due to the quality of their work, and must provide surety information (name, rating and limits). Must submit surveying and testing equipment for field observations.
432	Airport Approach/Obstruction Surveying	Identification and Analysis of obstruction to Aerial Navigation in Airport Approaches. Perform Identification/Analysis Survey of Critical Obstructions in Airport Approaches. Provide written approach to management of Obstruction Study to ensure project compliance.	Project Engineer/ Land Surveyor P.E./P.L.S.	P.E./P.L.S. Must submit three (3) Studies/Projects completed within the last five (5) years identifying Airport Approach Obstructions conforming to Federal Aviation Regulation (FAR) Part 77, 'Objects Affecting Navigable Airspace' and FAA Advisory Circular 50/5300-13, 'Airport Design' and all FAA Orders/Reports related to airport approach obstruction inspection, and provide a list of previous obstruction surveys and the following for each airport approach surveyed: project name and owner, type of approach, number/type of navigational aids, Owner reference/evaluation, commencement and completion dates, and contract value. Knowledge of FAA Runway Safety Publications and had initial or recurrent training for CFR Part 130.303. Must state whether firm has defaulted or failed to complete contractual obligations with the last 10 years, whether firm has ever been terminated due to the quality of their work, and must provide surety information (name, rating and limits). Must submit surveying tools/equipment for field observations and obstruction identification and analysis.

**BICYCLE & PEDESTRIAN****Ed Johnson (919) 707-2604****BICYCLE & PEDESTRIAN**[erjohnson2@ncdot.gov](mailto:erjohnson2@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
315	Municipal & Regional Planning Studies						
316	Multi-Use Trail Design, Survey & Layout						
318	Bicycle Map Preparation						
132	Landscape & Streetscape Design						

**TURNPIKE AUTHORITY****OPERATIONS & MAINTENANCE**

Tracey Creech (919) 707-2715

[trcreech@ncdot.gov](mailto:trcreech@ncdot.gov)

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
320	General O&M Knowledge						
321	Level 1 – Preliminary O&M Plan						
322	Level 2 – Final O&M Plan						
323	Level 3 – Investment Grade O&M Services						
324	Other O&M Services						

**TURNPIKE AUTHORITY****WASTE MANAGEMENT**

Tracey Creech (919) 707-2715

[trcreech@ncdot.gov](mailto:trcreech@ncdot.gov)

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
325	General Solid Waste Management Services						
326	Construction Waste Consulting						
327	Demolition Debris Recycling Consulting						
328	Other Waste Management Services						

**TURNPIKE AUTHORITY****Tracey Creech      (919) 707-2715****GENERAL TOLL KNOWLEDGE**[trcreech@ncdot.gov](mailto:trcreech@ncdot.gov)

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
365	Infrastructure/Interface & Coordination						
366	Toll System Planning & Design						
367	Toll Standards Development						
368	Toll System RFP Development						
369	Toll Operation Marketing Strategy						
370	Toll Collection Facilities & Equipment						

**TURNPIKE AUTHORITY****OTHER TOLL SERVICES****Tracey Creech      (919) 707-2715**[trcreech@ncdot.gov](mailto:trcreech@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
371	Traffic and Revenue Forecasts						
372	HOT Lane Studies						

## **PHOTOGRAMMETRY**

**Rob Allen (919) 707-7094**

**PHOTOGRAMMETRY**

**roballen@ncdot.gov**

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
157	Photogrammetric Services	The work consists of photogrammetrically compiling planimetric, topographic, and DTM data; field classifying planimetric features; collecting and mapping cadastral data from existing county tax bases; merging the compiled photogrammetric data with field data such as planimetric classification, cadastral data, and utility data; producing planimetric maps, topographic maps, base plan sheets, digital orthophotography, and DTM data as specified in the NCDOT Photogrammetry Unit manuals; and delivering the planimetric maps, topographic maps, base plan sheets, digital orthophotography, and DTM data in both digital and hardcopy formats.	Land Surveyor	P.L.S.	P.L.S.	P.L.S.	Must submit examples of work of that include: Planimetric mapping file in Microstation V8 DGN format; Digital Terrain Model (DTM) in Microstation V8 DGN format; Orthophoto in TIF and SID formats with associated world files. All mapping and base plan sheet digital data shall be delivered in MicroStation design files that conform to the NCDOT Photogrammetry Unit level structure and symbology specifications; DTM data shall be delivered in MicroStation 3-D design files that conform to the NCDOT Photogrammetry level structure and symbology specifications. Digital orthophotography shall be delivered in either MrSID format or TIF format with associated world files. The firm must be capable of providing full photogrammetric services, including aerotriangulation, DTMs, digital data delivery, cadastral mapping and field classification. Must submit a list of the hardware and software in use at the office that will perform these services. Must include the location of the office being prequalified.
2	Aerial Imagery Services	The work consists of acquiring high-resolution metric aerial imagery at various altitudes above mean ground level (AMGL) ranging from 300 feet to 15,000 feet.	Land Surveyor	P.L.S.	P.L.S.	P.L.S.	Must submit a list of the hardware (planes, cameras, GPS/IMU equipment, etc.) and software (flight planning, post processing, etc.) in use; the base of operation; and list of sub-consultants you propose using. For aerial imagery missions at 1500 feet AMGL or higher, the metric aerial imagery system shall be a large format digital frame camera with a Global Positioning System/Inertial Measurement Unit (GPS/IMU) to provide object space exterior orientation data. For low altitude (less than 1500 feet AMGL) aerial imagery missions, the metric aerial imagery system shall be either a large format or medium format digital frame camera, or a 9 inch format metric film camera. In all cases, the metric aerial photographic system shall provide forward motion compensation and be able to meet the accuracy requirements for low altitude imagery (+/- 0.05' at 300 feet AMGL). All data for the GPS/IMU work listed above shall be prepared in both hardcopy and ASCII formatted electronic files.



**GENERAL SERVICES DIVISION****Shohreh Katoozian (919) 707-4551****ARCHITECTURE**[skatoozian@ncdot.gov](mailto:skatoozian@ncdot.gov)

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
332	Building Design						
333	Building Construction Administration						
334	Advance Planning						
335	Programming Studies						
336	Roof Design						
337	Estimating						

**GENERAL SERVICES DIVISION****SITE CIVIL ENGINEERING****Shohreh Katoozian      (919) 707-4551****[skatoozian@ncdot.gov](mailto:skatoozian@ncdot.gov)**

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
338	Building Site Design						

**GENERAL SERVICES DIVISION****Shohreh Katoozian (919) 707-4551****PLUMBING, MECHANICAL & ELECTRICAL ENGINEERING**[skatoozian@ncdot.gov](mailto:skatoozian@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
346	Plumbing Design						
347	Mechanical Systems Design						
348	Commissioning						
349	Life Cycle Cost Analysis						
350	Building Envelope Design						
351	Electrical Engineering Design						
352	Lighting Control Design						
353	Fire Protection/Fire Alarm System Design						
354	HVAC						
355	Geothermal Design						
356	Energy Modeling						

**GENERAL SERVICES DIVISION****STRUCTURAL ENGINEERING****Shohreh Katoozian****(919) 707-4551**[skatoozian@ncdot.gov](mailto:skatoozian@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
357	Building Structural Design						
358	Building Foundation Design						
359	Special Inspections						

**GENERAL SERVICES DIVISION****Shohreh Katoozian** (919) 707-4551**ARCHITECTURE**[skatoozian@ncdot.gov](mailto:skatoozian@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
360	Topographic Surveying						
361	Boundary Surveying						
362	Easement Surveying						

**STATE ROAD MAINTENANCE UNIT****Joe Turner    (919) 733-3725 ext. 8430****DISASTER MONITORING**[idturner@ncdot.gov](mailto:idturner@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
398	FEMA Compliance Monitoring & Auditing						
399	Disaster Recovery Planning						
400	Debris Removal Monitoring						
401	Disaster Recovery Data & Accounting						
402	Truck Verification/ Certification						
403	Load Ticket Certification						

**PUBLIC TRANSPORTATION DIVISION****TRANSIT PLANNING SERVICES****David Bender (919) 707-4678**[dpbender@ncdot.gov](mailto:dpbender@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
407	Economic/Fiscal Impact, Cost-Benefit Analysis, Financing Alternatives	Identify and describe a broad array of predictive and evaluative methods used to conduct economic impact analysis of public transportation investments.	Minimum of 3 primary staff personnel including: Project manager  Economist  Transportation Modelers	AICP	5		Must show substantial experience estimating direct and indirect cash inputs to local and regional economies, job creation and other economic impacts resulting from transit related activities.
408	Public-Private Venture Organizational Alternatives	Assist community leaders and public officials together with private investors and developers to navigate the public/private development process.	Minimum of 3 primary staff personnel including:  Public involvement specialist	AICP	5		Must show experience in developing partnerships in public environments and private enterprise to promote shared cost sharing for transit facilities and services.
409	Demand Modeling, Ridership, Revenue, Cost and Profitability Analysis	Develop detailed models to estimate operating costs for transit alternatives.	Minimum of 3 primary staff personnel including:  Transportation modelers	AICP	5		Must show substantial experience performing ridership/revenue modeling and forecasting for transit service, including familiarity with the transit systems in North Carolina.
410	Community Transportation Service Plans	To identify, evaluate, develop, recommend and implement strategies that provide planning elements for meaningful mobility options for the	Minimum of 3 primary staff personnel	AICP AICP	5		Must show expertise in the development of the Community Transportation Service Plans to satisfy NCDOT PTD requirements. Expertise includes but not limited to, transit planning, traffic flow analysis, operations analysis, financial analysis, capital

		general public and targeted populations by allowing passengers to travel where and when they want and need to go.	including: Project manager Transit planner Public involvement specialist	planning, route analysis, cash flow analysis and needs assessment.
411	Transit System Consolidation Studies	Develop recommendations and alternatives for consolidation of community transit systems in NC.	Minimum of 3 primary staff personnel including: Project manager Transit planner Public involvement specialist	Must show expertise in the development of a consolidation community service transportation plans to satisfy NCDOT PTD requirements. Expertise includes but not limited to, coordination opportunities, regionalization and consolidations opportunities, transit planning, traffic flow analysis, operations analysis, financial analysis, capital planning, route analysis, cash flow analysis, needs assessment.
412	Transit Facility Feasibility Studies for Transit Support Structures	Determine if transit facilities are viable and practical for transit system.	Minimum of 3 primary staff personnel including: Transit planner	Must show project experience in transit facility design at the concept and functional level.
413	Transit Support Feasibility and Implementation Studies	Develop supporting information necessary to guide overall system implementation and supportive policy action.	Minimum of 3 primary staff personnel including: Transit planner	Must show project experience in transit facility design at the concept and functional level.
414	Other Special Transit Studies		Minimum of 3 primary staff personnel including: Transit Planner	

## PUBLIC TRANSPORTATION DIVISION

### TRANSIT SYSTEM COMPLIANCE

**David Bender (919) 707-4678**

[dpbender@ncdot.gov](mailto:dpbender@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
417	Conduct Compliance Reviews for Transit System	Conduct discretionary reviews of grant recipients and sub recipients to determine whether they are honoring their commitments, as represented by certification, to comply with the requirements of FTA funded transit programs.	Minimum of 3 primary staff personnel including: Project manager Transit planner	AICP	5		Must show substantial experience in conducting federal and state compliance reviews for sub recipients of transit systems that received both federal and state funding grants in accordance with FTA federal compliance circulars.

## PUBLIC TRANSPORTATION DIVISION

### TRANSIT SYSTEM ANALYSIS

**David Bender (919) 707-4678**

[dpbender@ncdot.gov](mailto:dpbender@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
418	Route and Schedule Analysis for Urban Bus Systems	Conduct an analysis of existing and proposed bus route systems in urban and small urban transit systems.	Minimum of 3 primary staff personnel including: Transit planner	AICP	5		Must show substantial experience in conducting complex urban transit systems route and schedule analysis.
419	Transit Service Productivity Review and Analysis	Develop productivity trends and outline possible strategies for transit.	Minimum of 3 primary staff personnel including: Transit planner	AICP	5		Must show substantial experience in conducting complex urban transit systems service productivity trends and strategies.

## PUBLIC TRANSPORTATION DIVISION

### TRANSIT SYSTEM CAPACITY

**David Bender (919) 707-4678**

[dpbender@ncdot.gov](mailto:dpbender@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
420	Organizational, Operational and Administrative Assessments	Conduct urban and rural transit system assessments to develop effective and efficient service.	Minimum of 3 primary staff personnel including:	AICP	5		Show substantial experience in the development of urban and rural transit system assessments.
421	Conduct Local and Statewide Needs Assessments	Develop common approaches to the comprehensive statewide needs assessment useful for all transit systems and transportation providers.	Transit planner				Show substantial experience in the development of urban and rural transit system need assessments in the development of Local Coordinated Plans in accordance with FTA requirements.

## PUBLIC TRANSPORTATION DIVISION

### TRANSIT SYSTEM TECHNICAL ASSISTANCE

**David Bender (919) 707-4678**

[dpbender@ncdot.gov](mailto:dpbender@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
422	Statewide Circuit Rider Technical Assistance Program for Transit Systems	Provide safety data analysis; special studies, research, planning and design for safe and efficient transportation systems.	Minimum of 3 primary staff personnel including:	AICP	5		Must show substantial diverse experience in all aspects of both urban and rural transit planning, safety and operational analysis.

**PUBLIC TRANSPORTATION DIVISION****TRANSIT GENERAL GRANT ADMINISTRATION****David Bender (919) 707-4678**[dpbender@ncdot.gov](mailto:dpbender@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
423	Transit Grant Program Administration	Provide administration and oversight for federal and state grant funding programs statewide.	Minimum of 3 primary staff personnel including:  Grants administrator  Transit planner	AICP	5		Must show substantial experience and knowledge of all FTA federal and NCDOT transit grant programs. Experience must include grant funding application development, program administration and financial/accounting practices.
424	Transit Program Funding Formula Allocation Analysis	Review and evaluate the current funding formula allocations.	Minimum of 3 primary staff personnel including:  Transit planner	AICP	5		Must show substantial experience and knowledge of all FTA federal and NCDOT transit grant programs.
425	State Management Plan Development	Provide technical assistance on the update for FTA adoption.	Minimum of 3 primary staff personnel including:  Transit planner	AICP	5		Must show substantial experience and knowledge of all FTA federal and NCDOT transit grant programs.
426	Program System Analysis	Develop programs for the transit systems which identify recommended improvements for the system.	Minimum of 3 primary staff personnel including:  Transit planner	AICP	5		Must show substantial experience and knowledge of all federal and state transit funding programs and demonstrate ability to apply innovative and relevant concepts to refine transit system operations.

427	<b>Program Funding Sustainability</b>	Develop strategies to maintain and continue program services after funding period of performances are over.	Minimum of 3 primary staff personnel including: Transit planner Accountant	AICP CPA	5	Must show substantial experience and knowledge of all federal and state transit funding programs and demonstrate ability to apply innovative and relevant strategies to ensure sustainability of transit system operations.
428	<b>Vehicle Specification Preparation and Analysis</b>	Provide innovative solutions and guidelines for fleet management challenges and utilization for transit systems.	Minimum of 3 primary staff personnel including: Fleet management specialist	AICP	5	Must show ability to evaluate and optimize fleet utilization for transit system.

**CONTRACTUAL SERVICES UNIT****Mickey Biedell**    **(919) 707-4803****GOAL SETTING**[mbiedell@ncdot.gov](mailto:mbiedell@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
435	Aspirational Goal Setting						Requirements will be listed in the Advertisement for firms interested in becoming prequalified for this discipline.

**CONTRACTUAL SERVICES UNIT****Mickey Biedell**    **(919) 707-4803****DISPARITY STUDY**[mbiedell@ncdot.gov](mailto:mbiedell@ncdot.gov)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
436	Disparity Study						Requirements will be listed in the Advertisement for firms interested in becoming prequalified for this discipline.

**PORT AUTHORITY****Mark Blake (910) 251-5674****PORT SHIP TERMINAL FACILITY DESIGN**[mark.blake@ncports.com](mailto:mark.blake@ncports.com)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
445	Berth & Wharf Structures	Deepwater structures to serve ocean-going vessels, and support loads from cranes, on-dock rail, wheeled vehicles.	Marine / Structural Engineers	P.E.	5	P.E.	Must show substantial experience and knowledge of berth and wharf structures. Preference is to have structural engineers who are also certified divers.
446	Mooring & Breasting Structures & Equipment	Structures, product and equipment for mooring and breasting of ocean-going vessels	Marine / Structural Engineers	P.E.	5	P.E.	Must show substantial experience and knowledge of mooring and breasting structures and equipment.
447	Dredging	Design of dredging work near Port berths. May include stability analyses and hydrographic surveying.	Hydraulic / Geotechnical Engineers	P.E.	5	P.E.	
448	Marine Terminal Design – Containers, Intermodal, Bulk & Break-Bulk Materials	Conceptual planning and design of marine facilities in the various transportation modes of container, intermodal, bulk and breakbulk. Bulk products may include liquid and dry bulk.	Civil / Structural Engineers Port Planner	P.E.	5	P.E.	Must show substantial experience and knowledge of planning and design of marine terminals.

## **POR T AUTHORITY**

**Mark Blake (910) 251-5674**

### **POR T CRANE MAINTENANCE**

[mark.blake@ncports.com](mailto:mark.blake@ncports.com)

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
449	Ship-to-Shore Container Crane Maintenance	Evaluation, assessment, repair and maintenance recommendations, and design of container cranes.	Civil / Structural / Electrical Engineers	P.E.	5	P.E.	Must show substantial experience and knowledge of design and maintenance of ship-to-shore container cranes.
450	Ship-to-Shore Gantry Crane Maintenance	Evaluation, assessment, repair and maintenance recommendations, and design of gantry cranes (rail-mounted cranes that rotate on a turntable).	Civil / Structural / Electrical Engineers	P.E.	5	P.E.	Must show substantial experience and knowledge of design and maintenance of ship-to-shore gantry cranes.

## **POR T AUTHORITY**

### **POR T FACILITIES PAVEMENT MAINTENANCE**

[mark.blake@ncports.com](mailto:mark.blake@ncports.com)

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
451	Concrete Pavement Management for Ports	Assessment, evaluation, repair and design of concrete pavements specifically designed for the loadings of a deepwater marine facility.	Civil Engineer	P.E.	5	P.E.	Must show experience and knowledge of design and maintenance of concrete pavements at deepwater marine facilities. Experience and knowledge of concrete pavements for airport runways and taxiways will be considered.
452	Asphalt Pavement Management for Ports	Assessment, evaluation, repair and design of asphalt pavements specifically designed for the loadings of a deepwater marine facility.	Civil Engineer	P.E.	5	P.E.	Must show experience and knowledge of design and maintenance of asphalt pavements at deepwater marine facilities. Experience and knowledge of asphalt pavements for airport runways and taxiways will be considered.

**PORT AUTHORITY****Mark Blake (910) 251-5674****PORT FACILITIES ELECTRICAL SYSTEMS**[mark.blake@ncports.com](mailto:mark.blake@ncports.com)

Discipline Code	Discipline	Description of Work	Key Personnel Required	Employee Registration Required	Minimum Years of Experience	Firm Registration Required	Additional Requirements
453	Distribution Systems for Low/Medium & High Voltage	Evaluation, assessment and design of distribution systems for a deepwater marine facility, including electrical supply to cranes, refrigerated containers, sheds and warehouses, and (potentially in future) rubber-tired or rail-mounted gantry crane in the container yard.	Electrical Engineer	P.E.	5	P.E.	Must show experience and knowledge of design and maintenance of industrial electrical distribution systems.
454	Lighting for Warehouse & Open Storage Cargo Areas	Evaluation, assessment and design of lighting systems for a deepwater marine facility, including sheds and warehouses, container yards, and general open storage areas.	Electrical Engineer	P.E.	5	P.E.	Must show experience and knowledge of design and maintenance of industrial lighting systems.

## **PORT AUTHORITY**

### **PORT SECURITY & SURVEILLANCE DESIGN**

**Mark Blake (910) 251-5674**

[mark.blake@ncports.com](mailto:mark.blake@ncports.com)

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
455	Security & Surveillance Design	Must possess a thorough knowledge of federally-mandated security features for seaports, and an understanding of their design and implementation.	Electrical / Security / Communication Engineers	P.E.	5	P.E.	Must show experience and knowledge of design and maintenance of security and surveillance systems.

## **PORT AUTHORITY**

### **PORT LONG RANGE PLANNING**

**Mark Blake (910) 251-5674**

[mark.blake@ncports.com](mailto:mark.blake@ncports.com)

<b>Discipline Code</b>	<b>Discipline</b>	<b>Description of Work</b>	<b>Key Personnel Required</b>	<b>Employee Registration Required</b>	<b>Minimum Years of Experience</b>	<b>Firm Registration Required</b>	<b>Additional Requirements</b>
456	Long Range Port Planning	Must possess a thorough knowledge of port industry, shipping and maritime trade, and the associated infrastructure requirements both on the Port and outside the Port (connecting to the Port) in order to assess and recommend guidance, policies, and projects that most effectively improve the logistics system for ocean-going freight.	Port planner	AICP	5		Must show substantial experience and knowledge of port industry, shipping and maritime trade.